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The Beattie-Smith Lectures.[1]

(UNIVERSITY OF MELBOURNE.)

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LECTURE II.

I NOW want to try to show something of the realistic methods it is possible to use, and then perhaps to teach to certain members of the patient's family, so that they can take an active part in aiding the patient's recovery when recovery is likely, or in helping him at least to attain a functional level at which he may be cared for in his own home by his own family.

This mostly involves consideration of the many forms of treatment connoted by the term psychotherapy. In 1938, during the first enthusiasm for the physical means of treatment, I heard Professor Demole, of Basle, Switzerland, say: "Psychotherapy is still the treatment of mental disorder; the other methods make him fit for psychotherapy."

[1] Delivered at Melbourne on May 11 and 18, 1953.

Like most psychiatrists who have spoken or written on this subject in recent times, I propose to give my own views, based on personal experience and observation. The literature is vast, and the student may well be dazed by the differences in psychotherapeutic principles laid down by the various authors. I shall endeavour to confine the explanatory part of my talk to the very few general principles about which there is now appearing to be some general agreement, and I shall therefore make few references to other authors, except where my own methods were suggested by their writings.

That psychotherapy is an art rather than a science must be obvious from the first consideration of the subject, and that it is "the art of discouraging disease and promoting health by influences in the mind" is a definition which can hardly be challenged.

When lecturing to students on mental disorders I was frequently asked for teaching in psychotherapy. My reply was that neither I nor anyone else in my belief could do that; but I advised them to read well-known authors on the subject and then see a few patients with chronic neurosis chosen for them as cases in which they were unlikely to do any harm. They would then, being entirely realistic and honest with themselves, discover a fact of paramount importance—whether or not they had an aptitude for the work.

Having this aptitude is the first requirement of the psychotherapist, but it is far from being the only one, as is sometimes believed. One has heard it said: "A good, very experienced G.P. is the best psychotherapist possible." I yield to no one in my admiration of this doctor; but I believe that if he is in fact a good, very experienced general practitioner, he will be the first to agree that aptitude for an art is of most limited value without knowledge of that art. A basic study of psychology, psychopathology and psychiatry must accompany and support the aptitude before an attempt is made to learn psychotherapy.

The foregoing does not, of course, apply to members of a patient's family to whom the psychiatrist is endeavouring to show some methods of applying mental influences for the benefit of the patient. This may sometimes be done at a purely factual level, and as a matter of teaching to him material well within his comprehension, and with due regard to his educational standard. It is so very easy to talk over the person's head; what seems of almost childish simplicity to the psychiatrist may represent the height of complexity to the individual he is trying to show.

Now I cannot stress too strongly that this method of eliciting the family's, or one member of the family's, help in treatment is doomed to utter and complete failure unless a degree of what I shall term equilibrium can be established between the psychiatrist and his "trainee" if I may so call him. This equilibrium is a different relationship from that described as *rapport* between psychiatrist (or psychotherapist) and patient, about which I shall have more to say later.

With a relative it has constantly to be borne in mind that his or her emotions are very much involved, and unless and until a state of emotional equilibrium is attained no progress can be made. Often it cannot be attained, and for this reason I rarely attempt to elicit help in treatment from the people in such close relationships as mother and son, or wife and husband.

It is mostly agreed among medical men that it is "not done" for a doctor to treat his wife, mother or children, and the very sound reason for this is that natural affection, which is an emotion, clouds judgement. I myself dislike giving my wife even an aspirin, and wonder if I have taken it from the wrong bottle. I trust, now that I have made this confession, that my colleagues will not deduce from it some peculiar, subconscious, probably Freudian urge which would be sure to be uncomplimentary!

To return to our patient's relative: it is not to be expected that a clear, clean-cut, emotionless desire to help can be attained or produced, whatever the relative's intelligence rating and educational standard. However, it can sometimes be approached in such relations as brother, sister, uncle, aunt and, rarely, friend, and I want to assume for the moment that such a person has been found and "prepared" as it were.

What methods of psychotherapy is it possible or desirable to demonstrate? Is it worth while spending time on this? Few specialists have less time to spare than the psychiatrist; his working day, clinically, must be carefully arranged, and it may be held that his time should be spent with his patients. In a complete and well-integrated psychiatric team this may well be so, and any instruction of relatives be delegated a function of the psychiatric social worker. However, my own opinion is that it is sometimes worth the psychiatrist's while—or, to be accurate, it has been worth my while—to instruct a selected relative in some form of psychotherapy.

Obviously, to decide this form is a highly individual matter; but I want to tell you of a simple technique which I have used for many years, and which has sometimes been successful. This concerns the production of a degree of relaxation in a tense patient.

As we are all aware, tension is a very common, indeed almost a constant, symptom of the neuroses. Its root cause may be buried deep below consciousness; but while efforts are being made to uncover and render innocuous this root cause, it is often desirable or even necessary to give symptomatic relief.

If we assume that our patient suffers an anxiety neurosis for which he is being treated as an out-patient, and he complains, as these patients so often do, that he cannot relax or that he is "keyed up all the time", I talk to him along the following lines:

> Yes, well you must learn a method of relaxation, and I am going to describe to you a simple exercise, which you must do every day—it only takes 7 or 10 minutes, and if you persevere you will learn something very valuable—that is the ability to relax at any time.
>
> Now, when you return home from work in the evening, is a good time—say, while you are waiting for the wife to put tea ready. Go into the bedroom and shut the door. Take off your collar and tie, belt and shoes. Lie down on the bed, flat on your back, your head on the pillow, arms by your side, heels about 12 inches apart. Close your eyes and start to tell yourself that you are lying there for the purpose of relaxing—of slackening off all your muscles. Do not think about your nerves—you have no control over them at present—but you have got control of your muscles—you can tighten or slacken them as you wish. Now you are going to slacken them, and starting with any part of your body—say your left leg. Now I'm thinking about my left leg—the foot, calf, thigh—it's all slack—no muscle is contracted. My right leg the same, no muscles being used. My tummy muscles—I'm not holding them rigid, they're all soft and "doughy"—my chest, I'm breathing easily and quietly—my neck is slack, my head's on the pillow, my arms are flopped by my side, my hands half open, half shut, in the most relaxed position, my jaw is not clenched, my face is not screwed up. Right! I've been all over my body—all my muscles are slack—I've gained relaxation—it's just as if I'd made myself a mess of jelly that would flow over the bed if it were not for my skin—I'm relaxed, relaxed, relaxed.
>
> Then open your eyes, get up, go in and join your wife and family for tea.
>
> Now this exercise must be done every day—regularly. It will be about 3 or 4 weeks before you really can relax and when that time comes, you will be surprised to see that what you thought was relaxation wasn't relaxation at all—but now you've learned it what a great relief it is—you can then do it any time—in a train or tram-car, or at the cinema—it is a most valuable possession, is the ability to relax.

That is the technique with the patient. Occasionally a form of "build-up" may be added by telling him of famous people—people in the public eye, like Sir Winston Churchill—who have learned this method and have said that they could not get through their work without a few minutes' real relaxation some time during the day.

Here is a simple, very practical form of psychotherapy that may also be taught to a relative so that he and the patient practise it together. The relative is, of course, separately "briefed" that his function is to see that the patient actually does the exercise, to encourage him, to be enthusiastic about the method, to avoid any suggestion of forcing the patient to do it, and, above all, not to do anything beyond his instructions.

Sometimes Fink's little book "Release of Nervous Tension" is prescribed for the patient. Many psychiatrists advocate this to save time; but I have always disliked this. It is sometimes not easy to remember that while to us books form a considerable part of our lives, to our patients a book may be an unfamiliar article and they fear it may be too complex. Then again, when patients do read books on the mental sciences, this generally serves only to increase their self-absorption.

Another method which can also be shown to relatives may be helpful in simple insomnia. This is an attempt to produce sleep by auto-suggestion and, as well as the patient, may be used by other members of the family. In that very wonderful literary work, Coleridge's poem "The Rime of the Ancient Mariner", there occurs this stanza:

> O sleep! it is a gentle thing,
> Beloved from pole to pole,
> To Mary Queen the praise be given!
> She sent the gentle sleep from Heaven
> That slid into my soul.

I instruct the insomniac to learn these five lines by heart. I have little slips with the stanza typed on it in my office,

and I give him one. The beauty of the lines is pointed out to him, and how the words nearly send one to sleep just reading them. At night, when he is ready to sleep, he is told to take up his usual sleep position and then, in the dark, with his eyes closed, repeat this stanza of verse over several times. He will often fall asleep.

I well know it is far from a universal success. Occasionally the peculiar adjective "sissy" (which seems to mean "unmanly") is applied to it, and there are the many who prefer the ubiquitous phenobarbital and other, in the long run, harmful tablets. But often it does work, and as an instruction it does not take long to give, and it can usually be appreciated and supported by relatives.

The selection of patients likely to benefit from psychotherapy from the psychiatrist, from his ancillary workers, or perhaps even from a suitably orientated relative bristles with difficulties; indeed, I know of few more controversial subjects among psychiatrists.

I have many times been told of some patient in some such words as these: "Look at the history, the results of psychometric testing, the failure of all the physical methods of treatment he has had—he's a constitutional or congenital psychopath and psychotherapy is a waste of time."

I am having the temerity to suggest that it may not always be a waste of time. Either individually or in the group situation there may emerge hitherto unsuspected mental traits which are capable of development and of direction in such a manner as to render the patient capable of functioning at a slightly higher level than hitherto. While he is not cured, a niche or a facet of life may be found into which, with his newly discovered potentiality, he may fit, thus lessening the burden on relatives, friends and the civil authorities, however slightly.

Professor Klaesi, in Berne, tells his students: "Work on the remaining good part of the mind, not the ill part." This, while not always possible, is certainly the method of choice in this type of case.

Sometimes in our enthusiasm for working out the psychopathology this simple principle is neglected. Most psychiatrists have had the experience of a chronic alcoholic of years' standing, who has perhaps brought more than one psychiatrist to the end of his therapeutic tether, suddenly stopping drinking. Whatever the reason for this may be, it does surely show that all along this patient has had within him the power to effect his cure, given the suitable trigger. While this type of case occurs, however rarely, psychotherapy cannot be a waste of time.

In the selection of suitable cases a clear understanding of what psychotherapy sets out to do is necessary. This is one of the great difficulties. Most psychiatrists are eclectic in their methods to a very great extent, but not wholly, and there does seem to be some general agreement, particularly since the abreactive techniques have been used more widely.

These methods have two main aims. The first is to produce what has been called an emotional catharsis, and thus relieve the patient of pent-up feelings of guilt, depression, aggression, frustration, and many more. The second is, by minimizing or abolishing conscious control, to permit the patient to relive long-past incidents, with their emotional charging, or to speak of long-repressed desires or urges, hitherto consciously repressed by reasons of shame, guilt, social or family taboos, or even lack of opportunity.

It is fairly generally agreed that an explanation given to the patient of how these forgotten incidents or repressed desires may be responsible for his present symptoms may be regarded as standardized. But an explanation, even including the replay of a recording of part of what the patient has said while abreacting, is rarely adequate. Secondary neurotic symptoms may have been added as sequelæ to the primary psychological error; he may, for instance, have become dependent or developed psychosomatic or apparent bodily troubles. It is from this stage that the technique of psychotherapy varies, and rightly so, in my view.

Today even psychoanalytic technique is less rigidly classical, and it seems to me that repressed aggression is regarded as being at least as important as infantile trauma and the genital zones.

Most authors agree that psychotherapists cannot be impersonal. Each emphasizes the methods which best conform to his subjective clinical acumen, in order to establish *rapport* with his patient. This *rapport* is perhaps not easy to define. It is an abstract concept, but a very real and necessary quality between therapist and patient. I have always held it to be "that quality of mutual interest which engenders the belief in the mind of the therapist that he can help the patient, and in the mind of the patient that the therapist can help him".

This is not transference in the psychoanalytic sense, although a degree of this phenomenon may occur and may be helpful.

If *rapport* is strong, then suggestion may be used; but unless and until that stage is reached, suggestion is useless. Although the suggestion is directed at below-conscious level, *rapport* at conscious level is, I believe, a prerequisite.

If *rapport* is not being established, then, in my opinion, the case should be taken over by another psychiatrist. This is the practice in the Repatriation Commission unit; or the patient may, for a time, join the group-therapy sessions.

Now we all know that the numbers of psychiatrists are merely able to touch the fringe of the vast amount of psychotherapy needed. It is partly for this reason that I believe psychiatrists should as a body give some time to the instruction or guidance of psychotherapists. I have avoided the use of the words "training" or "teaching" for reasons already given, and as the candidates would be mostly psychiatric social workers such guidance need not be prolonged. Our experience of their work would give us clues as to their aptitude. The psychologists might help by the use of the newer projection techniques in the examination of personality structure. Certain candidates would show aptitude for certain methods of psychotherapy—imaginative art, for example, in which the patients are guided to express themselves by applying colour to paper in purely æsthetic terms.

Evidence is accumulating that painting, in giving emotional release and an understanding of a patient's immaterial needs, is of much value.

Provided we can obtain an adequate number of psychiatric social workers and, having obtained them, use their services therapeutically as well as diagnostically, then we shall be able to see the patient's illness in terms of his family background. No matter if the patient's condition strongly indicates physical therapy, then psychotherapy is still required after the physical treatment. Indeed, Sargant and Slater (1948) state that it should precede, accompany and terminate the physical therapy.

Another aspect of the help the psychiatric social worker can give in the family group is the recreation or the production *de novo* of self-respect—the importance of the patient's job.

All jobs are important, and to convince the patient of this concept is, very often, to set in train an emotional sequence which may well take the place of his neurotic self-centredness.

In the last few weeks I had a patient, an ex-serviceman, an office cleaner, whose main complaint was occipital headache and sweating about the head and neck. When he was asked about his job, it was obvious that he considered it just as a matter of little importance, given to him out of charity, because he was an ex-serviceman. I took this point up with him, rather to his surprise. I told him that his job was very nearly as important as mine; I could not do my work properly if my room was not adequately dusted and cleaned; I could not understand his attitude that his job was of little importance. He had not considered this viewpoint before. The result was that at his next session with me the emphasis was on the poor quality of the polish he had to use, on the shortage of rags, and on the fact that his vacuum-cleaner was inefficient—with a corresponding lessening of his complaints about his head.

Now here is a simple remedial method, at conscious level, well within the scope of the psychiatric social worker, or even an adequately instructed relative or friend.

A very specialized method of psychotherapy is used by that admirable organization Alcoholics Anonymous. While their belief is in a higher power, they do approach the alcoholic by introducing him to other alcoholics. These people describe themselves as not having had an alcoholic drink that day; many of them have not had such a drink for years, but they still consider themselves as being "off" alcohol only from day to day. The new member finds himself in a company who "know all the answers", as it were, and its effect on him is usually very profound. I have attended many meetings of Alcoholics Anonymous and referred many patients to it.

Because of my interest in the possibility of widening the scope of psychotherapy, I have observed the results closely, and they are certainly effective. It is true that a close examination of the methods psychologically may uncover other motivations remote from the main purpose; but however this may be, there is no doubt of their success.

I have spoken much of the widening of the scope of psychotherapy, particularly with regard to the family.

In my first lecture I referred to sibling rivalry as a family situation, the relief of which, when it is properly diagnosed, is in the hands of the parents, who must be adequately instructed, and the progress of the patient carefully watched.

I may mention in this connexion the case of a boy, aged five years, of a well-known family in Scotland, some years ago. He started to vomit shortly after his baby brother was born. The unfortunate child had many biochemical investigations before it was suggested that he was simply jealous of the new baby, and that he had observed that his mother had vomiting during the latter months of her pregnancy.

Sibling rivalry should always be considered, even in connexion with bodily illnesses in children when the symptoms appear inexplicable. Let us look for a moment at the parents of the mentally defective child who has had to be admitted to hospital. In my view their psychiatric care cannot be neglected, as it so frequently is. The psychiatrist's and the family doctor's work is far from finished with the child's admission to hospital; indeed, it may be only beginning. The fact of the child's admission to hospital may mean success to the doctor or psychiatrist—what he has been working for for perhaps years; but it may represent utter failure to the mother or father. Perhaps the mother blames herself—she should never have let the child go; or she may blame her husband.

A situation of this kind, with its high emotional charging from the sudden eruption into consciousness of long-repressed guilt or aggression cannot be ignored, and here the family may be more important, therapeutically, than the patient.

Again, the psychiatric social worker's services are called upon after the psychiatrist has dealt with the acute phase. The psychiatrist may describe to her the best line to take at her visits. It may be that repeated reassurance as to the child's care is necessary—what may be accomplished by skilled training or, on the other hand, assurance that neither parent is responsible for the child's condition.

This situation is also common enough in other cases than those involving mentally defective children. Most psychiatrists are familiar with the "over-mothered" youth who has developed acute schizophrenia. The mother walks up and down the psychiatrist's office, wringing her hands and saying: "Why should this have happened? I did everything for that boy; he was never exposed to any dangers; I was always there to look after him."

I think the point here is to remember that in her present mood psychotherapy, even by the psychiatrist, would be almost certain to fail and, worse than that, generate antagonism or hostility. This period, however, need not be wasted therapeutically. The psychiatric social worker may call, but only to report the progress of the patient in hospital, and to refrain from any discussion as to causative factors. She is, however, getting to know the mother, against the time when the psychiatrist may decide that the attempt must be made to change her attitude towards her son. Perhaps the father's help may be elicited; but too often he, as well as the son, has been completely overwhelmed by the mother's personality.

We have all heard much of the treatment of the youth in hospital—the technique of full coma insulin therapy, the subsequent rehabilitation—but it is my contention that if we ignore the parents, or the environment in general when it has clear ætiological significance, then we are ignoring a factor which may well minimize the skilled and thorough treatment the patient may have in hospital, and increase the risk of relapse after his discharge.

Conclusion.

The demand for psychiatric treatment is steadily growing and it is a matter of grave urgency that efforts should be made to meet that demand. The position at present is serious—there are shortages everywhere—and if this state of affairs is allowed to continue, an inevitable result will be a lowering of our present high standards of treatment.

Psychiatry can never be hurried; it is of its very nature time-consuming. It is but rarely that the length of a patient's stay in hospital can be predetermined with any accuracy, or how long he should attend as an out-patient.

For many years psychiatry was the Cinderella of medicine. Patients' relatives disliked reference to the patient; the subject was not discussed in drawing-rooms; it was something unpleasant, that was better ignored, and the patients usually could not, or were not permitted to, speak for themselves.

Even at the start of the last great war psychiatric patients were among the first to suffer privations. At that time in England I was ordered to clear out one block of 600 beds in my already overcrowded hospital to make room for possible civilian casualties. I begged for huts ments or pavilions to be built, but apparently this could not be done, and it was not done for two years. Thus my patients lost all their day space; the beds in the dormitories were so close together that the patients went to bed by climbing in over the foot. Of course we had an epidemic (dysentery) and just escaped typhoid.

I suppose it was necessary—it is not for me to criticize the conduct of the war; but I well remember how troubled I felt that the one section of the community who had lost their civil rights—who could not get together and defend their right to even the very meagre comfort that they had—should be so treated. One felt that one had let them down—ill people who were in one's charge. This was a situation not very dissimilar from that obtaining in Victoria in the past.

Those days are over, and, we devoutly hope, can never recur. The treatment of the mentally ill must be kept in the forefront of the minds not only of our legislators, but of everyone with a social conscience.

The time is overdue for the foundation of a chair of psychiatry at this university. That it will come, in my view, follows as the night the day. One is irresistibly tempted to add: "Eventually, why not now?"

Recently it will have been noticed in the newspapers that America had organized a "Mental Health Week" and that it was not very successful, one reason for this being that the people were shocked by the realization of the vast numbers of the mentally ill. If this is so, then I should say that the mental health week was in fact a success, because such a realization is just what is required.

That the general attitude to mental health is improving no one can doubt. It is a source of deep satisfaction to all of us to see this awakening. The alarm-clock has gone off and this sleeper—the public—is stirring. Indeed, he is thoroughly aroused, beyond the stage when he will shut the clock off and have another five minutes. He will now dress quickly and get out to the job, and he will do it; he always does, once he understands, and he understands now.

I shall close with a word on research, urgently needed in our vast science. It may be that we are on the verge of a

new epoch in the understanding of mental function. The new science and technology of the calculating machines—cybernetics—has opened up vast possibilities in the similarities of the working of complex electronic mechanisms with that of the mind. When, as now, a calculating machine can be constructed that not only solves complicated arithmetical problems, but checks its own results, and has actually a "memory" in which it can store other sets of figures, obviously the possibilities of the future are boundless. At present, however, we have our well-tried methods of treatment of the mentally ill, and if I have drawn some attention to the importance of the patient's family I shall be more than satisfied.

FRIGIDITY IN THE FEMALE.[1]

By J. W. JOHNSTONE, M.S., D.G.O., F.R.A.C.S., F.R.C.O.G.,
The Women's Hospital, Melbourne.

THE problem of female frigidity presents itself commonly to the gynæcologist, and not infrequently to the psychiatrist; the two specialties overlap. Soma and psyche are merely living facets of the total organism, reacting as a whole to internal bodily stimuli and environmental stresses. Every disease is a mixture of both aspects of the personality, and this is particularly so in the disabilities of cohabitation.

PHYSIOLOGY OF THE SEX ACT.

Intercourse has arisen in Nature from the necessity of bringing the gametes into such proximity that they can unite to form the zygote. This requires an anatomical approximation and adjustment of the genitalia locally, and a constitutional attunement of the psyche. The act involves a variable mixture of two components working in harmony; a psychic love-component concerning cortex and brain stem, and a somatic pattern of impulses involving a discharge over spinal reflexes. Both the local and general components have an embryology and can be set against their biological background.

The nervous mechanisms concerned are understood only in general terms, and the account given, perhaps more descriptive than precise, closely follows that described by Kenneth Walker (Walker and Strauss, 1948). The pattern is the same in both sexes, although by this it is not meant to imply that the female is merely a male in disguise. The sexes have divaricated from a common eunuchoid stem as a result of the interaction of genetic and hormonic factors. Coitus is made up of three phases—a period of preparation or love-play with an incrementing degree of excitement, an acme of orgasm, followed by detergescence and relaxation.

Local Mechanism.

Mechanism of Erection.

Afferents arising from the penis, both glans and *corpora cavernosa*, together with those from the prostate and vesicles, play upon an erection centre situated in the lumbar enlargement of the cord. The efferent pathway acts upon the erectile vascular tissues and the secretory glands (Figure I). In the female the afferents arise in the clitoris, about the vestibule and the bulbs, as well as in the vagina and perineal muscles. It is not uncommon to find localized areas which are more highly erotogenous—for example, about the urethral meatus (Figure II).

Phenomenon of Accumulation.

The erection centre does not act in an all-or-nothing manner, but is subject to a summation of stimuli. It may be likened to a cistern filling with water before it spills over, or to a Leyden jar accumulating a charge before it sparks (Figure III). A tired or "leaky" centre may be hard to fill, or it may be irritable and set too low, so that it discharges prematurely. It may be inhibited from above, as by the voluntary deflection of thought, or by attempts to bring into operation the mechanisms of micturition or defæcation. Reduction in the intensity of the stimuli or the rhythm sequence, by arrest of movement, allows the central irritability to subside. Such "soft pedal" technique is used for the prolongation of the act in *coitus reservans*.

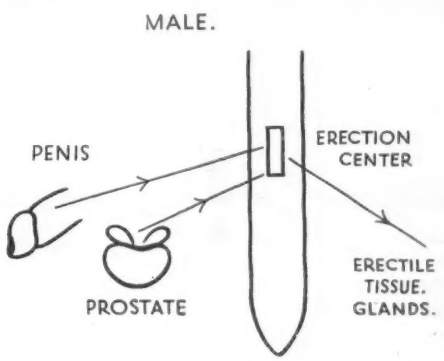


FIGURE I.
Mechanism of erection.

Ejaculation.

There is every reason to believe that there is an ejaculatory centre, quite separate from the erection centre, and lying slightly below it in the lumbar swelling of the cord. When the stimulus from the erection centre overflows upon this centre, it acts in an all-or-nothing manner with peripheral discharge of secretion in the male, and spasmodic movements (Figure IV). This is followed by depletion and a refractory period. The reflexes are impaired by destructive lesions of the lumbar swelling, but they can be evoked in the presence of transverse lesions of the cord at higher levels.

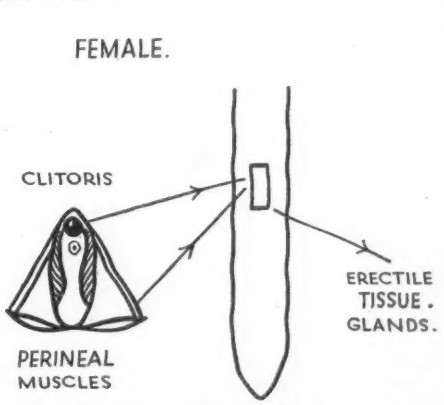


FIGURE II.
Mechanism of erection.

The local mechanism, therefore, is a chain of somewhat complicated reflexes involving the lumbar swelling and also the pelvic autonomic ganglionic masses. The adequate local stimulus is a pattern of impulses peculiar to the individual, and, as the descriptive writings of Havelock Ellis (sometime of Sydney) have shown, as complicated as an orchestral composition. The erotogenous zone corresponds in general to the area of special and pigmented sexual skin, which represents the primitive cloaca that has become externally everted onto the perineum.

[1] Read at a meeting of the staff of the Women's Hospital, Melbourne, with the Australasian Association of Psychiatrists, on June 9, 1953.

Ejaculatory Patterns.

There are two fairly distinct reaction patterns in the female—the clitoral and the vaginal. Clitoral orgasm is the more primitive and can be achieved by about two out of three women; the vaginal orgasm by less than half. In those women who can achieve both, the vaginal orgasm is more deeply satisfying and valued the more (Malleson, 1951). A few females can achieve both, the rarer one involving an irradiation to the deep perineal musculature. The location of the stimulus pattern and the muscular

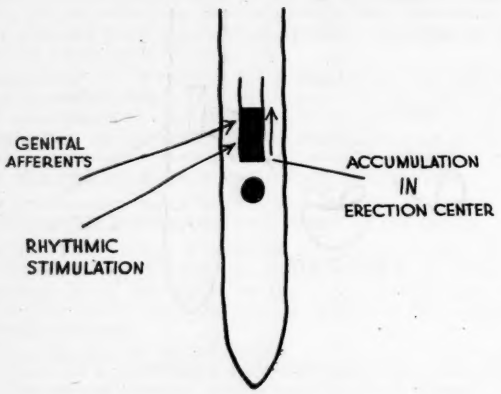
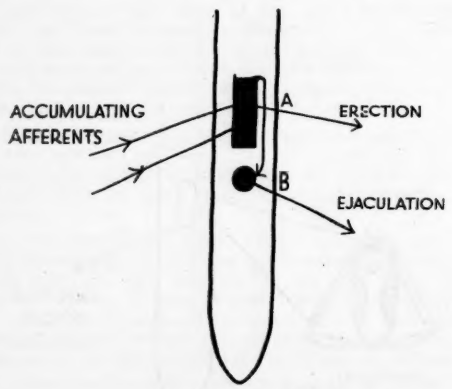


FIGURE III.
Phenomenon of accumulation.

response differ in the two types. Adequate stimuli for the first arise from the clitoris, the vulva and the bulb of the vestibule, and the response is in the superficial perineal musculature.

Opinions vary as to the part played by afferent stimuli from the vagina and cervix in the production of the deeper



A. ERECTION CENTER.
B. EJACULATION CENTER.

FIGURE IV.
Mechanism of ejaculation.

orgasm. There are no afferent sensory nerves above the lower third of the vagina or in the cervix. It is most likely that the significant stimulus in the vaginal region arises from proprioceptor afferents in the levator and other musculature of the region which are evoked by rhythmic tension. Active cooperation by muscular action on the part of the female plays a part in this apparently more matured process and may contribute to its more satisfying effect.

Central Mechanism.

Psychogenic Component.

A central component of sexual desire is necessary for proper functioning. It may involve afferents coming from sight, touch and smell in the immediate situation, as well as cortical imagery involving memory of past experiences. Its driving force is in the instinctive urges of the past, but the finished pattern for the individual is the end result of a long embryology of the psyche from infancy to maturity. In the process it is subject to many deflections, inhibitions, fixations and regressions and is largely orientated by the subconscious (Figure V).

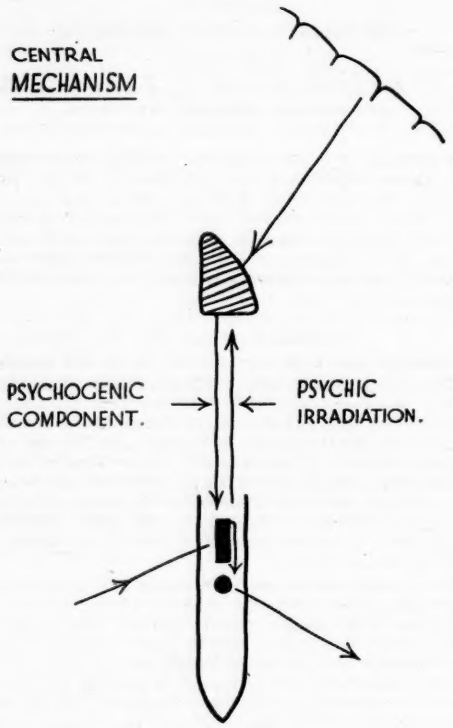


FIGURE V.

Psychic Irradiation.

Voluptuous sensations, appreciated perhaps mostly at subcortical levels, accompany the activity of the local reflexes and culminate in the orgasm. It may be noted that the sensory affect, or pleasurable feeling-tone, does not arise *de novo* in the sensorium or in association with the psychogenic concept, but is concurrent or consecutive only to peripheral activity. That is, the ruminations of psychic imagery may produce the elaborations which we know as love and its associated sentiments, but there is no concomitant affect or experiencing of feeling, either as a simple sensation or in the form of the voluptuous transportations of the orgasm, without activity of the genitalia. Love seeks expression in lust.

In a general way this is in accordance with the James-Lange hypothesis concerning the experiencing of an emotion (Ewen, 1950). The perception of danger or recalling dangerous circumstances is not the experiencing of the emotion of fear. This feeling of being afraid appears to arise only as a secondary effect, and always in association with a stirred-up state of the body. Should the perception of the original circumstances and the significance of their danger be suppressed from consciousness, the liberated affect may persist as a "congealed fright",

with concomitant psychic symptoms and somatic signs. These may be resolved by coalescence of the original components in a process of revivification, or release of affect in abreaction.

Some are of the opinion that pleasurable ability in sexual activity in the female is biologically on the way out—that it is becoming but an atavistic remnant of a richer primitive sensual experience ruled by the mid-brain. Others believe that it is developmentally on the up-grade. In keeping with brain development, the sensory mid-brain component in humans has an added cortical irradiation, introducing perception, memory and learning. The sex act has become divorced from the aim of reproduction, and has become an end in itself. The œstrous display and feeling of the lower animals are no longer a cyclical association of ovulation; love has evolved from lust. The sexual urge seems to be achieving a significance and perhaps a purpose extending beyond that for which it was primarily created. The orgasm seems to be a discharge of psychic energy or emotional affect, something akin to the process of abreaction in psychiatry, which in some way may be necessary for health or for the maintenance of optimum intrapsychic tension.

Role of Sex Hormones.

In the lower animals, œstrogens excite female sexual activity and œstrous behaviour, and this effect can be induced in immature and castrate females. The human female is an exception, for œstrogens seem to have no direct erotic effect. The anomalous effect is seen in that androgens have an erotic action. Œstrogens depress the male libido, but androgens in large doses in both sexes increase sensitivity of the external genitalia, heighten sexual desire and intensify gratification in orgasm. The effect seems to be mostly on the peripheral mechanism.

Definition of Frigidity.

The sexual pattern is a summation of components; there is an average type, but no true norm. Women vary; there is an old saying: "You never see two alike any one time, and you never see one alike twice." Sexual ability in marriage is not something suddenly invested on the couple at the altar, like a wedding present; it is a thing to be mutually cultivated into the finished achievement. On occasions, satisfaction can be achieved only by peculiar attitudes, visual impressions, or emotional displays such as screaming. It is possible to place sexual ability on a sliding scale which may be descriptively represented by Figure VI.

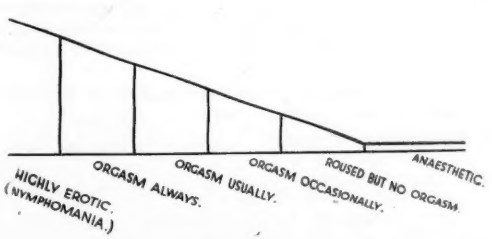


FIGURE VI.
Pictorial representation.

The woman who is truly frigid or sexually inert can have no conflict, no tension or problem, except a domestic one. She accepts intercourse as a domestic duty akin to washing the dishes, and is a handicap, not to herself, but to her husband. It is the more normally-sexed woman who can never achieve satisfaction who is more likely to become frustrated and neurotic, while the highly-sexed erotic woman who is continually tortured but never can be satisfied is more likely to become frankly psychotic. To call a woman with such an intense problem "frigid" would be an insult to her feelings. There is loose thinking and no settled opinion as to what constitutes frigidity. Dyspareunia and vaginismus are common facets, but a woman may have either or both with high desire and local sensitivity. To some, frigidity means lack of emotional and physical response; to others it implies lack of orgasm capacity only; and others again are inclined to project the meaning onto the neurotic symptoms which stem from frustration.

Statistical Review.

The histories of a number of patients complaining of sterility who had been interviewed in private practice were investigated. It will be realized that factors operate to make this a selected group from various aspects, but it provides some broad index of the sexual reactions of the female population during their maturity. The analysis of 750 consecutive cases in which sufficient data were recorded to make a classification is set out in Table I.

TABLE I.
Personally Interviewed Consecutive Sterility Patients.

Capacity	Number	Percentage
Orgasm usually	348	46
Orgasm sometimes	158	21
Pleasure, no orgasm	104	14
Passive	82	11
Intercourse distasteful ..	58	8
Total	750	100

It will be seen that about two-thirds knew and appreciated the meaning of orgasm. This being a personal and subjective experience, many of the remainder did not know of its existence. About one in 12 found intercourse distasteful, and usually there was the complaint of dyspareunia also. In the series, dyspareunia was a complaint in 15%, but in more than half of these cases it was of the deep pelvic variety and only mildly or intermittently distracted from pleasure. In keeping with the previous diagram these cases may be pictorially (not accurately) represented by Figure VII.

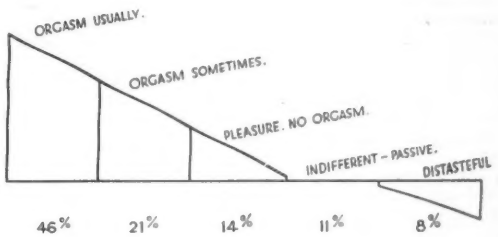


FIGURE VII.
Statistical survey.

Classification of Frigidity.

Frigidity falls naturally into two classes: cases of secondary frigidity, in which the condition is consecutive to some local lesion which interferes with the act—that is, it is anatomically determined; and cases of primary frigidity, in which there is no adequate local lesion, and the condition depends on the psychological attitude.

Secondary Frigidity.

Secondary frigidity is a gynæcological problem. Other names might be organic, symptomatic or acquired frigidity, or pseudo-frigidity, because the disability is a direct sequence of the lesion. Persistence of the symptoms leads to aversion to the act, to dyspareunia or to vaginismus. Some of the disabilities are disparity in size, congenital septa, deformity and hypoplasia, scarring from accidents or operations, ulcers, inflammations, and fissures about the

passages. The patient is usually conscious of the fact that something has gone wrong locally, as if she had a cracked lip or fissure-in-ano.

There are two types: (i) superficial dyspareunia, in which the patient places the difficulty and pain around the outlet; (ii) deep dyspareunia, in which penetration is not difficult, but high in the vagina and deep in the pelvis there is a different type of sickening pain radiating to the lower part of the abdomen. The ovary is the only really sensitive organ in the pelvic cavity, and nearly always this is involved. The pain can be reproduced by squeezing the ovary against the pelvic wall. The innervation of the testicle is the same, and in males a similar pain may be reproduced by a blow on the testicle. This deep pain may happen on occasions in many women, owing to the disposition of the ovaries at the time, or to the position of the ripening follicles. In some cases of retroversion the prolapsed and tender ovaries are continuously exposed to this insult. Among the 750 patients interrogated for pain, deep dyspareunia was the main complaint of 9%, and superficial dyspareunia that of a further 6%.

Primary Frigidity.

Primary frigidity includes the great majority of cases. It involves not the apparatus but the personality—primarily the psyche, not the soma. The local manifestations—anæsthesia, hyperæsthesia, spasms and rigid outlets—are usually the manifestations of a distorted psychological outlook. The woman who goes into spasms when she perceives the doctor putting on a glove has not got a rigid hymen but wrong ideation. The mechanically minded gynæcologist finds it easy to accept the rigid outlet as the cause, and by false rationalization the patient easily concurs. Experience shows that only some patients are cured by having the outlet made wider, or by reassurance or persuasion at an intellectual level.

Certain conceptions are of importance for proper psychodynamic orientation. What we call behaviour is the observable manifestation of the individual adjusting herself to the circumstances of the environment and the internal and inherent demands of her personality. The woman misbehaving in the sexual situation is not malingering at the intellectual level, she appears to have no other course open to her. When she is faced with the unalterable circumstances of a husband and the sexual situation, it becomes a psychodynamic necessity to change herself. Her behaviour is not subject to the ordinary ways of thinking, feeling and acting; she is said to be psychoneurotic. The distorted behaviour of her organs, the spasms, anæsthesias and hyperæsthesias, we may call the manifestations of conversion hysteria. She does not suffer from a deficiency of libido, but from a neurosis, or disease of the unconscious. She is performing a psychological masquerade, commonly using other symptoms, or cover-causes, as a pretext for her lack of sexual pleasure.

The genitalia are the most hysterical of all organs. The word "hysteria", from the Greek word for uterus, means literally "wandering of the uterus". Although women may have a similar anatomical structure of the genitalia, they do not have the same personality organization. Any understanding of personality and behaviour is difficult unless the operation of subconscious factors is taken into account. A woman may be unable to act normally in the sexual situation for reasons of which she is unaware.

There are fallacies in applying structural metaphors to processes which are descriptive and abstract, but for psychodynamic orientation it is convenient to undertake dimensional thinking. Mentality is a dynamic and dimensional phenomenon, its components being analogous to the tri-dimensions of space set in a component of time. The plane of thinking and feeling at any one moment of time may be likened to the surface of a pond. Conscious attention may flit over this field as light plays over a landscape. Boats and waterlilies may be rocked from the winds above, or the surface may be clouded by subterranean discharges and movements in the deeper supporting layers. As Kroger and Freed (1951) state in their book on psychosomatic gynæcology:

> Personality is not a superficial but a depth phenomenon of which the external aspects are but a layer. Some aspects of the personality are observable and conscious; others are concealed not only from the world but also from the individual himself and are unconscious. The hidden unconscious aspects of the personality are definitely related to those that are conscious and observable.

We study the structure and development of the uterus, but we are inclined to neglect the embryology of the mind. Mature sexual functioning is not something which suddenly comes into existence at puberty. It has its roots in the instinctive urges of the genetic past, and the final structure is reached after a period of growth and dynamic adjustments from birth to maturity. Fixation may result in the persistence into maturity of an infantile emotional feeling and outlook toward sex. The gynæcologist can hope to influence by superficial psychotherapy only some cases of distortion and maladaptation acquired after puberty. The only hope, if any there is, for the large residue of patients, is from the deeper methods used by our colleagues the psychiatrists.

Clinical Patterns.

Cases are individual problems in which both partners are concerned; but some common types of frigidity as seen in gynæcological practice can be listed. In almost all cases the basic cause is fear, guilt, or conflicting loves. The types may be set out as follows:

1. Cases of inhibition by pain due to a persistent organic lesion. This is rare, because the process is conscious and can be dealt with rationally.

2. Cases in which the husband is mainly at fault, owing to simple lack of understanding, to impotence or to premature ejaculation, or because he has a perversion.

3. Sensitivity in women who, by upbringing or religion, regard sex and expressions of pleasure as wrong.

4. Cases in which persistent blunting of feeling has resulted from *coitus interruptus*.

5. Situational difficulties, such as living with "in-laws".

6. Cases of facultative frigidity, in which there is an aversion to the particular partner, perhaps owing to physical characteristics, behaviour or infidelity. These include cases in which one partner is in love with another, and the "rebound" marriages.

7. Persistent anxiety due to initial failure in consummation—"honeymoon failure"—which often affects both partners.

8. Feelings of guilt from previous episodes, or infidelity; sometimes from reading of the evils of masturbation.

9. Frigidity resulting from the certain knowledge that the partner is sterile. With semen analysis and salpingograms this is becoming of importance, and it is sometimes wise to apportion the faults.

10. Fear of pregnancy, often coupled with mistrust of contraceptives, and perhaps religious conflicts.

11. Post-partum frigidity, which develops for multiple reasons. In cases in which the woman was previously normal, there is often an emotionally significant traumatic incident involving a threat to life or malformation in the child. The parturient woman develops an emotional and regressed state of mind, during which suggestions given by those in authority are accepted with the force of conviction in the same way that prestige suggestion takes effect in the hypnoidal or hypnotic state. The subconscious conviction acts as a threat to the ego in any future reproductive situation. Expressions such as "likely to bleed to death", "only big enough for a small baby", "pregnancy will mean a threat to the kidneys", may have a significance to the patient out of all proportion to those who utter them.

12. In a large remaining group, there is a deep distortion of personality structure with deviation of the aim or object of love, or regressions of parts of the emotional life. Possibly some cases may result from the use of enemas or soap sticks in infancy, others from non-resolution of the Œdipus situation with infantile fixation on the father as the love object, from Narcissism, or from latent homosexuality.

TREATMENT.

The taking of a history is the most important first step in treatment. The patient is helpless by having no adequate words to express her situation, and it is necessary to go more than half-way to meet her. She has no guide, other than her own subjective sensations, as to what constitutes normality, and about one patient in three has never experienced orgasm and many do not know what it is. To those who have no problem it is important to do no harm. The troubles of some patients result only after reading or discussions. Completely frigid women are not problems to themselves and may help the marital situation by some pretence.

Significant gynæcological lesions should be corrected, a plastic episiotomy being performed when there is superficial dyspareunia. It is not sufficient to divide the perineum sagittally and sew it transversely; scar tissue must be avoided, the outlet opened widely, and the vaginal epithelium exteriorized. A posterior vaginal flap including the hymen should be dissected up, the perineal muscles divided deeply, and the separated vaginal layer brought down (Fenton's operation—Berkeley and Bonney, 1942). Even then follow-up is necessary. Ventrosuspension operations for deep dyspareunia should not be abandoned.

Advice on intercourse should be given separately to both partners. A posture of complete flexion and abduction of the thighs, with a pad under the buttocks to flex the spine, counteracts spasm, as does also a conscious bearing-down effort as if to empty the rectum. A water-soluble type of lubricating jelly is most helpful. The vagina may be accustomed to the presence of a foreign body by the use of graduated dilators, and this is advisable after operations. The passage must be educated rather than forced. The dilator is passed with as much cooperation as possible, allowed to remain *in situ*, and reinserted a number of times. One dilator at a time is given to the patient, with instructions that it be passed when she is in the bath, a bearing-down effort and some lubricating jelly being used.

Frigidity seems very rarely to be related to hormonal deficiency, and androgen therapy is of doubtful value, particularly as the eroticizing effect probably just falls short of virilization. Structural changes such as hirsutism, alteration of the voice and growth of the clitoris may not always be completely reversible. The use of hormones may be justified by the fact that combined methods of attack summate their benefits with synergic effect, particularly when a large element is functional. In bringing down birds it is better to use small grape-shot rather than single bullets. Methyl testosterone, 15 milligrammes given by mouth daily, or testosterone propionate, 25 milligrammes given twice weekly by injection, can be administered for one or two months, and perhaps supplemented with the inunction by the patient of androgen ointment onto the vulva at night.

Some degree of psychotherapy is necessary in all cases, and is used by every doctor to some extent, and with increasing effectiveness by those with experience and intuition. If relief is to be brought to a large number of patients with pelvic symptoms, it can result only from an extension in this field. The gynæcologist who can bring to bear only surgical manipulation and medications carries a most inadequate kit. It is often not the vagina which needs reshaping, but plastic surgery at a higher level—on the mind. It may relieve the patient and dispel inferiority feelings to know that satisfactory sex life rarely comes from the first few attempts, that many women who never know what orgasm is are happily married, and also that there is nothing wrong in sex behaviour which gives satisfaction to both.

A "talking-out" technique, by sympathetic listening and interest with a little assistance, while the patient verbalizes her difficulties and resolves some of her conflicts, is helpful. Emotional illness, and abstract difficulties within the self, which cannot be exteriorized in words or feeling, may appear in organs as psychosomatic symptoms. In the psychosomatic type of interview there is often a reversal of the usual doctor-patient situation. The patient talks, and is encouraged to pass from her pelvis and its organs to her difficulties and feelings. To those accustomed to a surgical discipline, it may seem odd not to make an attack on the organs of the soma with a scalpel; or that a patient who is unable to accept at an intellectual level the explanation that there is nothing wrong with her organs, can get some resolution of symptoms by talking and feeling in the interpersonal atmosphere developed by a particular type of interview.

Methods of reassurance, explanation, reeducation and ventilation will help patients suffering from maladjustment and some of the traumatic lesions acquired in maturity. There are definite limitations, especially in the sexual disabilities, to what the gynæcologist should undertake. Some symptoms are of such importance to the patient that the ability to live more comfortably, or perhaps even sanely, without them is shattered; they are as important to her as crutches to one without legs. Deep psychotherapy should be left to those experienced in psychodynamics and methods of analysis. In their present state of application it is doubtful how many patients can be helped by these expensive and protracted procedures. Certainly there are many cases in which frigidity is too deeply structuralized into the female personality and interwoven with unalterable circumstances for even these to be worth while.

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EPIDURAL SPINAL HÆMORRHAGE, WITH A REPORT ON TWO CASES.

By MERCY SADKA,
Perth.

EPIDURAL SPINAL HÆMORRHAGE is not mentioned as an entity in any of the popular current text-books of medicine or neurology. Unassociated with traumatic damage to the vertebral column or spinal cord, or with hæmorrhage elsewhere, it is a rare phenomenon. A search of the literature was prompted by the admission to the Neurosurgical Unit of the Royal Perth Hospital of two patients with extradural spinal hæmorrhage. Reports of only 12 cases were found.

In 1946 Ver Brugghen described the case of one patient who had come under his care and quoted five others from the literature. Two more were reported by Shenkin, Horn and Grant in their survey of 54 patients with epidural lesions admitted to the University of Pennsylvania Hospital in the ten years from 1934 to 1944. In 1949 Kaplan and Denker reported two cases of their own and reviewed those already mentioned. Chevany, Taptas and Pecker reported one from Paris in the same year, and Svein, Adson and Dodge one from the Mayo Clinic in 1950 (see Table I).

Age and Sex.

With the inclusion of the present two cases, five of the 14 occurred after the age of sixty-seven years. The ages of the remaining nine patients ranged from twenty months to forty-three years. Therefore no age group is exempt, but the number of cases is too small for any other conclusion to be drawn. The sexes were equally affected.

Site and Extent of Lesion.

Lesions occurred at all levels of the epidural space, from the second cervical vertebra to the lowest limit at the second sacral vertebra. The extent of the lesions was usually over two or three segments, though one (number

TABLE I.

Main Features of Reported Cases of Epidural Hæmorrhage.

Number.	Author.	Sex.	Age in Years.	Site.	Preceding Strain.	Pain (P); Cord Loss Below Lesion (L).	Outcome.
1	Bain, 1897	F.	18	Second and third cervical vertebræ.	Straining at stool.	P: Immediate. L: Partial at once, complete 2 hours.	Death 2 hours after onset.
2	Hopkins, 1899	M.	40	Lumbar vertebræ.	Shovelling coal.	P: Immediate. L: Partial at once, complete 2 hours.	Death 4 days after onset.
3	Jonas, 1911	M.	35	Fifth and sixth dorsal vertebræ.	Fall 10 feet.	P: Immediate. L: Partial at once, complete 24 hours.	Recovery after operation.
4	Reid *et alii*, 1925 ..	F.	(*a*)	Third cervical to second sacral vertebræ.	Fall off bicycle.	P: 12 hours. L: Partial 36 hours, complete 5 days.	Death 5 days after onset.
5	Hassin, 1935	F.	32	Tenth dorsal vertebra.	Trivial fall.	L: Complete 2 days.	Death 2 weeks after operation.
6	Shenkin, 1945 ..	(*b*)	1¼	Upper dorsal vertebræ.	——	L: Complete few days.	Recovery after operation.
7	Shenkin, 1945 ..	M.	42	Fifth and sixth dorsal vertebræ.	Twist in bed.	L: Complete 2 hours.	No recovery after operation.
8	Ver Bruggen, 1946 ..	M.	75	Fifth and sixth cervical vertebræ.	Fall four feet on buttocks.	P: Some minutes after. L: Almost complete few hours.	Recovery after operation.
9	Kaplan, 1949	M.	43	Twelfth dorsal to first lumbar vertebræ.	——	P: At onset. L: Partial few hours, complete 3 days.	No recovery after operation.
10	Kaplan, 1949	F.	39	Fifth and sixth dorsal verbetræ.	Vomiting.	P: Immediate. L: Partial at once, complete 3 hours.	No recovery after operation.
11	Chevany, 1949 ..	F.	70	First and third lumbar vertebræ.	——	P: At onset. L: Almost complete few hours.	Recovery after operation.
12	Svein, 1950	M.	67	Third and fourth lumbar vertebræ.	Fall on ice upon buttocks.	P: 2 weeks later. Partial *cauda equina* lesion, time uncertain.	Recovery after operation.
13	Case I, present article ..	F.	73	Eighth to tenth thoracic vertebra and more.	——	P: At onset. L: Complete one hour.	No recovery after operation.
14	Case II, present article..	M.	70	Seventh cervical to second dorsal verterbrae.	——	P: At onset. L: Partial 2 days, complete 4 days.	Death 9 days after onset.

(*a*) Age not stated, but patient recorded as menstruating.

(*b*) Sex not stated.

4) extended from the third cervical vertebra to the lowest limit of the epidural space. Of the remainder, two lesions were cervical, five dorsal, one dorso-lumbar and three lumbar.

Precipitating Factors.

Preceding and presumed by the authors to be provocative strain or trauma was reported in nine cases; but in only one, the fall of a thirty-five year old farmer 10 feet from a hay loft (number 3), was it severe. In the remaining eight cases, the following were given as precipitating factors: straining at stool (number 1); lunging forward while shovelling coal (number 2); mild falls (numbers 4, 5, 8 and 12); a sudden twist in bed (number 7); and vomiting due to cholecystitis (number 10). No precipitating factor could be incriminated in three cases. These patients were the baby of twenty months (number 6), a man of forty-three years who was shaving when his illness started (number 9), and a woman of seventy years (number 11), whose symptoms began as she was getting back into bed at night after having passed urine—an onset identical with that of one of the patients in the present series (number 13—Case II).

Symptoms and Signs.

In eight of the 12 cases reported, the characteristic pattern of the disease appeared to be a sudden onset of extremely severe backache at the level of the lesion, synchronous with, or followed rapidly by, swiftly progressive loss of cord function below the level of the lesion. This loss was complete or almost complete within twenty-four hours of the onset of the illness in six cases, and within five days in two cases. Associated radicular pains occurred in all but one of these cases. The length of time during which pain persisted is mentioned in only four cases, in which it is recorded as disappearing after the loss of cord function had occurred. In the three cases in which pain was not mentioned as a symptom, loss of cord function below the level of the lesion was complete in two days, "a few days" and two hours respectively. There was only one case in which the pattern was different from those mentioned above. This, as might be anticipated, was the one (number 12—Case I) in which the hæmatoma did not overlie the cord itself, but was situated at the level of the third and fourth lumbar vertebræ. The clinical features resulting simulated those produced by a prolapsed intervertebral disk. Pain did not occur until a fortnight after the fall, and the patient did not present himself for treatment until ten months later.

Investigations and Treatment.

The investigation of these patients centres on lumbar puncture with manometry and radiological examination including myelography. The cerebro-spinal fluid, where its examination is reported, was notable only in that it sometimes had a high protein content, up to 180 milligrammes *per centum*. Complete or partial block was found on jugular compression and by myelography.

Treatment is by surgical removal of the clot if this is feasible. In two cases (number 1 and number 4) it clearly was not, for in the one fatal quadriplegia developed in two hours, and in the other the hæmatoma extended over

almost the whole length of the spinal epidural space. However, in five of the reported cases complete relief was given by surgery. Four patients showed no recovery, even though the operative removal had been considered satisfactory and no other lesion was present.

It is interesting to see how far the present cases correspond with those described above.

Reports of Cases.

CASE I (Number 13).—Mrs. L.S., a housewife, aged seventy-three years, was referred to the Neurosurgical Clinic at the Royal Perth Hospital from another metropolitan hospital on January 20, 1950.

She had suffered for over twenty years from headaches, which she had been told were due to high blood pressure. She had had three abdominal operations, the last ten years before; but, apart from appendicectomy and the removal of an ovarian cyst, she did not know what had been done and had had no symptoms referable to the abdomen since.

On January 19, 1950, at 5.0 a.m., she got out of bed to pass urine, and on getting back into bed her symptoms began. This onset was exactly similar to that in Chevany's patient, an elderly woman of seventy years (number 11). She was suddenly struck by severe pain in the centre of her back, with pains in the "stomach" and buttocks. Almost immediately her legs became paralysed and numb. A doctor was summoned, who gave her morphine, and she was admitted to a metropolitan hospital some hours later.

Examination revealed her to be a healthy-looking but frightened elderly woman. Her blood pressure was 200 millimetres of mercury, systolic, and 100 millimetres, diastolic, and her temperature was 99° F., and her pulse rate was 124 per minute. The peripheral arteries were thickened. She had a total flaccid paraplegia. Her upper limbs were normal. No superficial abdominal, knee, ankle or plantar reflexes could be elicited. There was complete loss of all forms of cutaneous and deep sensation below the cord level of the tenth dorsal vertebra. There was retention of urine, the bladder being enlarged three inches above the *symphysis pubis*. Apart from the abnormal findings mentioned, no other could be found.

It was reported that lumbar puncture, ten hours after the onset, revealed clear fluid, the pressure of which was not recorded, but there was a normal response to jugular compression. The cerebro-spinal fluid contained 200 milligrammes *per centum* of protein and 35 lymphocytes and 130 red blood cells per cubic millimetre; the Wassermann test failed to produce a reaction. X-ray examination of the thoracic and lumbar parts of the spine revealed no abnormality in the vertebræ; but calcification of the abdominal aorta could be seen. Myelography was performed by Dr. A. A. Merritt, who reported that "the contrast media traversed the whole length of the lumbar and thoracic region into the cervical region in an irregular manner".

It was thought that the patient might have a secondary vertebral neoplasm, but there was no direct evidence for this diagnosis. Operation was performed by Dr. J. P. Ainslie on January 20. The spines and laminæ of the eighth, ninth and tenth thoracic vertebræ were removed. This procedure revealed an epidural hæmatoma obviously extending beyond the unroofed portion of the neural canal. The clot was removed and a fine catheter was passed along the cord and saline injected through it to wash out the clot beyond the limits of the incision. When this was done distally, a large piece of clot measuring 3·5 by 1·5 by 1·5 centimetres was evacuated. After evacuation of this clot there still appeared to be some hæmorrhage coming from below, and as its site of origin and the pathological process causing it were unknown, it was thought to be unreasonable to subject such an elderly patient to a more extensive laminectomy. The dura was incised and the cord was seen to be normal and pulsating well. The wound was then closed. Post-operatively there was no recovery. The patient died elsewhere on May 21, 1950, of pyelonephritis. A post-mortem examination was not obtained.

CASE II (Number 14).—Mr. W.G., an old age pensioner, aged seventy years, was referred to the Neurosurgical Clinic on November 3, 1952. He had been in good health until some months before, when he began to suffer from headaches and shortness of breath on exertion. His doctor diagnosed hypertension and obesity and advised limitation of his activities and a rice diet. On October 29, 1952, he consulted his doctor, feeling "on top of the world". He had lost two stone in weight and now weighed 15 stone. He spent about four hours after this visit trimming his hedges and cutting the edges of his lawn, which, for him, was strenuous activity. That evening, while sitting quietly, he was suddenly struck with severe pain in the lower cervical part of the spine, radiating to his shoulder and on the medial aspect of both upper limbs to both hands. It was continuous and kept him awake most of the night. He consulted his doctor on the following morning (October 30) and was given an analgesic. This proved ineffective, and the next day he walked down again to the doctor's surgery, about a quarter of a mile away. This time he felt that his legs were "heavy", but he made no mention of this.

On November 1 the severity of the pain kept him in bed. During the course of the day he found it increasingly difficult to turn in bed, and he began to be incontinent of urine. That evening he received second-degree burns, of which he was unaware, on both feet, from hot-water bottles. On November 2 his pains had largely disappeared, but he was now entirely unable to move his body or lower limbs and his hands seemed weak. He was still incontinent of urine. His bowels had not opened since October 29. He was admitted to the Royal Perth Hospital and referred to the Neurosurgical Clinic on November 3.

Examination revealed him to be a mentally alert, elderly obese man, so thankful to be free of pain that he was cheerful in spite of his gross incapacity. His temperature was 99° F., his respirations numbered 26 per minute, his blood pressure was 100 millimetres of mercury, systolic, and 60 millimetres, diastolic. (It had been recorded as 210 millimetres of mercury, systolic, and 120 millimetres, diastolic, on October 29 and had not been estimated since. Horner's syndrome was absent.) His pulse rate was 100 per minute. There was thickening of the peripheral arteries, though the pulsation was of good volume. Examination of the fundi revealed silver-wiring of the retinal arteries, but no papilloedema, hæmorrhages or exudate.

He had complete flaccid paralysis of his abdominal musculature and of both lower limbs. The tone was normal in the upper limbs, and power was normal except in the intrinsic muscles of the hands, which allowed movement of the fingers and thumbs against minimal resistance only. The supinator and biceps jerks were normal, but the triceps jerks could not be elicited. The abdominal, knee, ankle and plantar reflexes were absent. There was no perception of any form of deep or cutaneous sensation below the level of the seventh cervical segment. Second-degree burns about four inches in diameter were present on the dorso-medial aspect of both feet. The bladder was enlarged half-way to the umbilicus, and he had retention of urine with overflow incontinence.

Lumbar puncture revealed clear fluid at a pressure of 80 millimetres of water and a normal response to jugular compression. The fluid contained eight lymphocytes per cubic millimetre, 87 milligrammes *per centum* of glucose and 172 milligrammes *per centum* of protein. The Lange colloidal gold test curve was represented by the figures "000000", and the fluid did not react to the Wassermann test. X-ray examination of the cervical part of the spine was reported on by Dr. Merritt as showing evidence of gross disk degeneration, and Dr. Merritt performed myelography (by the lumbar route), finding "no obstruction to the flow of the contrast media, but rapid flow through the cervical region, the difficulty of posturing an obese and helpless man making it impossible to slow down the process and pick out any minor obstructions".

A diagnosis of cervical spondylosis at the level of the sixth cervical vertebra with subsequent interference with the blood supply of the cord was made, though in view of Case I (number 13) the possibility of an extradural hæmatoma was considered. Operation was not undertaken, and the patient died four days later of bronchopneumonia without showing any prior alteration in his neurological condition.

At post-mortem examination bronchopneumonia and gross atheroma were found. Examination of the heart showed left ventricular hypertrophy, but it was not greatly enlarged. Apart from the spinal lesion, examination of the remaining organs revealed nothing of particular note. There was an organizing extradural hæmatoma (see Figure I) encircling the dura at the level of the seventh cervical to the second dorsal vertebræ, but chiefly overlying its posterior aspect and partly adherent to the laminæ. When the cord was removed, protrusion into the vertebral canal of transverse ridges between the bodies of the cervical vertebrae, especially between the sixth and seventh vertebræ, could be seen. However, on macroscopic examination the cord appeared normal. No cause for the hæmorrhage could be seen. Dr. T. R. Lubbe reported that careful microscopic examination of sections of the clot and of the cord failed to disclose any new information.

Differential Diagnosis.

The absence of a substantial block at myelography was a puzzling feature in both our cases, though admittedly the

investigation was unsatisfactory in Case II (number 14). It is clear, however, that epidural hæmorrhage overlying the cord produces a fairly constant clinical pattern, though a history of preceding strain or trauma is not invariable, nor are backache and radicular pain always present. Certain lesions causing loss of cord function can be excluded fairly confidently. Absence of toxæmia excludes epidural abscess. The rapid progress of the lesion is not characteristic of medullary or meningeal neoplasms. Transverse myelitis is generally accompanied by constitutional symptoms, and investigation will reveal no abnormality on myelography, and if syphilis is the cause the

FIGURE I.

Wassermann test will produce a positive reaction with cerebro-spinal fluid or blood. However, in patients over the age of thirty-five years, secondary vertebral neoplasm may be responsible for a similar clinical picture to that of epidural hæmorrhage and may not be detectable by X-ray examination for several weeks afterwards.

Cervical spondylosis is not uncommon after middle life and may be symptomless and irrelevant to any cord lesion present. Symptoms of cord involvement due to it usually progress slowly over months or years, upper and lower motor neuron disturbances outweighing sensory disturbances in severity. However, this is not invariable, and attention has already been drawn to the protean manifestations which may be found (Brain, Northfield and Wilkinson, 1952), including sudden loss of cord function in the absence of trauma (Symonds, 1953).

At the lumbar level, difficulty in distinguishing epidural hæmorrhage from a prolapsed intervertebral disk or a *cauda equina* tumour is illustrated by Svein's description.

Ætiology.

Hæmorrhage occurring in elderly patients with hypertension and gross atheroma occasions no surprise. It is of interest in this regard that six months after her epidural hæmorrhage, Chevany's seventy year old patient (number 11) sustained an intracerebral hæmorrhage with hemiplegia and aphasia, a common enough sequel of arterial degeneration, and she died a few days later. However, if in her, as in our own patients, arterial bleeding is assumed to be the cause of the epidural hæmorrhage, there is no explanation for the rare occurrence of bleeding at this site in people with degenerative arterial disease, and in any event, for such bleeding in young patients another cause must be found. In every report in which the ætiology is mentioned, epidural hæmorrhage is assumed to be of venous origin. Kaplan attempted to explain the mechanism involved. His view is that there may be some form of epidural venous abnormality in these patients. He quotes Turner and Kernohan, who found three cases of epidural varices in a study of the pathology of 46 cases of vascular malformation and tumours of the cord. A straining effort, increasing the intraabdominal and intrapelvic pressure, may cause a rise of pressure and reversal of flow in the epidural veins, which contain no valves. Rupture of a weakened vascular wall in some form of epidural venous abnormality could account for spinal epidural hæmorrhage.

Summary.

Two cases of spontaneous extradural hæmatoma are reported and 12 cases from the literature are discussed. The clinical manifestations, diagnosis and ætiology are considered.

Acknowledgements.

I am grateful to Dr. J. P. Ainslie, who suggested that I should report these cases referred to his unit, and to Dr. R. B. Lefroy for his advice and criticism. Mr. Chandler, of the Public Health Laboratories, took the photograph.

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THE MORTALITY IN AUSTRALIA FROM INFLUENZA AND FROM DISEASES OF THE RESPIRATORY SYSTEM.

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THE survey on mortality in Australia is being continued in this paper. The final aim of the survey is to put the fall in mortality in Australia into proper perspective and to apportion the fall to various classes of disease. The infective diseases as a whole have been discussed (Lancaster, 1952), and influenza has been included in that class but has not yet been further treated in this series. An account of it is given here together with the related class of diseases of the respiratory system.

TABLE I.
The Mortality from Influenza in Australia.

Period.	Sex.	Deaths from Influenza per Million per Annum at Ages (Years).									
		0 to 4	5 to 14	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 and Over.	All Ages.
1908 to 1910	M.	116	16	15	37	58	117	215	641	1754	99
1911 to 1920	M.	165	43	177	558	546	489	443	711	1772	347
(1919)	(M.)	(880)	(305)	(1549)	(5046)	(4746)	(3987)	(2627)	(2811)	(3454)	(2617)
1921 to 1930	M.	100	18	35	42	83	145	260	474	1544	114
1931 to 1940	M.	140	21	31	36	66	119	211	408	1283	109
1941 to 1945	M.	121	9	8	7	19	38	74	170	548	49
1908 to 1920	F.	83	14	19	25	59	72	220	677	2225	93
1911 to 1920	F.	152	47	154	374	322	319	456	810	1972	266
(1919)	(F.)	(816)	(331)	(1338)	(3208)	(2678)	(2363)	(2743)	(1977)	(3211)	(1825)
1921 to 1930	F.	92	18	30	58	88	103	180	421	1673	103
1931 to 1940	F.	129	17	24	39	63	81	134	346	1242	96
1941 to 1945	F.	118	9	3	9	18	23	45	136	534	44

TABLE II.
Mortality Rates from Diseases of the Respiratory System in Australia.

Period.	Sex.	Deaths per Million Years of Life Experienced at Ages (Years).									
		0 to 4	5 to 14	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	All Ages.
1908 to 1910	M.	2662	161	218	335	719	1290	2475	6793	17,249	1229
1911 to 1920	M.	2782	173	248	424	817	1501	2750	6062	19,165	1338
1921 to 1930	M.	2458	146	198	289	625	1357	2399	5115	16,597	1187
1931 to 1940	M.	1833	130	150	204	432	913	2061	4189	13,626	1007
1941 to 1945	M.	1546	85	86	107	239	611	1592	3828	12,413	888
1908 to 1910	F.	2112	147	158	262	462	715	1431	5307	15,256	899
1911 to 1920	F.	2273	159	175	297	437	678	1444	4719	16,473	939
1921 to 1930	F.	2028	137	155	244	400	577	1203	3719	14,973	862
1931 to 1940	F.	1487	112	125	190	296	471	947	2765	11,248	733
1941 to 1945	F.	1245	80	101	125	196	342	744	2220	10,024	678

TABLE III.
The Mortality in Childhood from Diseases of Respiratory System in Australia.

Period.	Sex.	Deaths per Million per Annum at Ages (Years).							
		0	1	2	3	4	1 to 4	5 to 9	10 to 14
1908 to 1910 ..	M.	7719	2618	1128	473	447	1193	200	119
1911 to 1920 ..	M.	7011	3065	1222	653	451	1370	233	107
1921 to 1930 ..	M.	6872	2660	959	634	398	1172	184	106
1931 to 1940 ..	M.	5421	1946	756	450	310	862	163	98
1941 to 1945 ..	M.	4648	1337	548	336	192	622	104	67
1908 to 1910 ..	F.	6126	2329	953	575	311	1061	179	113
1911 to 1920 ..	F.	5763	2615	1084	556	389	1179	194	121
1921 to 1930 ..	F.	5697	2223	908	579	336	1020	166	106
1931 to 1940 ..	F.	4272	1702	661	366	255	743	134	92
1941 to 1945 ..	F.	3854	1005	391	248	217	478	96	65

INFLUENZA.

It appears that two diseases are diagnosed as "influenza": first, the acute specific disease which occurs in epidemic and pandemic form, and second, indefinite acute febrile illnesses, which for want of a better name are often termed influenza. From the point of view of the survey, the epidemic of influenza in Australia in 1919 was of sufficient magnitude to retard the fall of mortality which has been such a feature of the decades since the beginning of the century.

Cumpston (1919), at that time Director of Quarantine, Commonwealth of Australia, detailed how influenza had been kept out of Australia by means of strict quarantine precautions till January, 1919. He gave the incidence of deaths in Australia by State and by year, and noted that 1820, 1826, 1836, 1847, 1852, 1860, 1885, 1891, 1899 and 1907 were years of unusually high mortality. Cumpston (1919) and also Burnet and Clark (1942) noted that in 1918 also deaths in Australia from influenza were higher than usual. Burnet and Clark (1942), writing after the conclusion of the epidemic, have been able to give a more complete account than has been possible for the former author. They pointed out that the age distribution in 1919 was different from that usual in the interepidemic years and in 1918. In the 1919 epidemic the attack and mortality rates were high in young adult life, whereas in other years influenza attacks the very young and the aged.

The first pandemic cases occurred in Victoria in January, 1919, according to Cumpston (1919), and he maintained that there was no demonstrable connexion with the arrival of any ship. Burnet and Clark (1942) were able to detect three epidemic waves in that State. From Victoria the disease spread to other States.

In Table I, I have given the mortality rates in Australia from influenza over the five periods chosen for study. The mortality rates for 1919 alone are also given in parentheses. In any period except that including 1919, the age distribution of influenza has a characteristic form. The mortality is high in the first five years, especially in infancy, it falls to a minimum in early adult life and then rises continuously throughout life. Excepting the rises to the 1911 to 1920 period, the mortality at all ages has tended to fall. In fact, at all ages except early childhood the mortality rates in the latest period, 1941 to 1945, tend to

be less than one-third those of 1908 to 1910. The age distribution in 1919 was quite different, with a strikingly high proportion of deaths between the ages of twenty and forty years. This has been commented on by Burnet and Clark (1942), who noted that about 40% of deaths occurred at ages twenty to forty years in England and in Australia. In Table I the same feature can be noted: the mortality is high in adult life. It remains high in the upper age groups, but as in the actual population there are relatively few old people; the deaths are most commonly observed in young adult life. Inspection of Table I shows that if the effects of the 1919 deaths are taken out, the experience of the remaining years of the decade 1911 to 1920 resembles that of 1908 to 1910.

Diseases of the Respiratory System.

In the class "diseases of the respiratory system" of the "International List of Causes of Death" are included such infective and inflammatory diseases of the nose and throat and of the lungs, pleura, mediastinum and respiratory passages as are not listed as specific infective diseases.

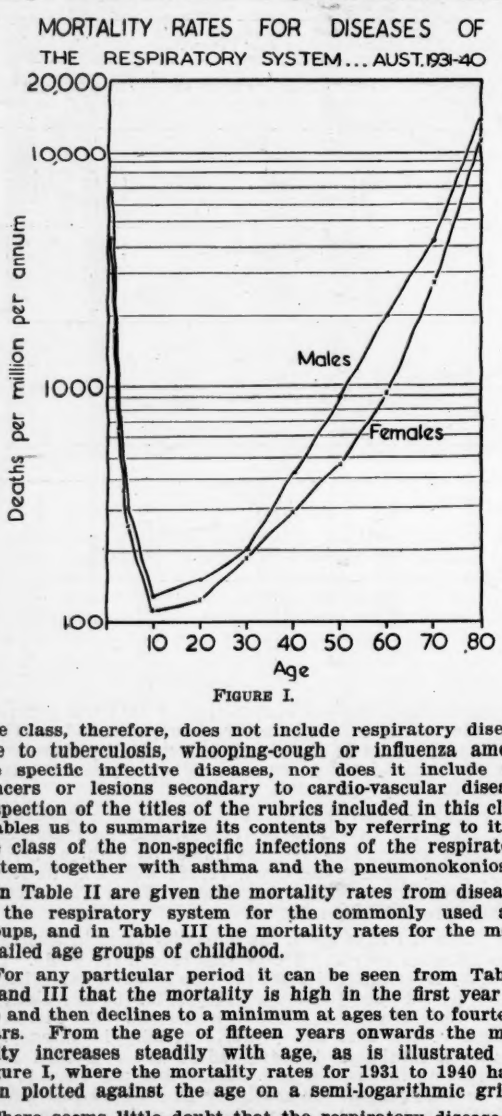

FIGURE I.

The class, therefore, does not include respiratory disease due to tuberculosis, whooping-cough or influenza among the specific infective diseases, nor does it include the cancers or lesions secondary to cardio-vascular disease. Inspection of the titles of the rubrics included in this class enables us to summarize its contents by referring to it as the class of the non-specific infections of the respiratory system, together with asthma and the pneumonokonioses.

In Table II are given the mortality rates from diseases of the respiratory system for the commonly used age groups, and in Table III the mortality rates for the more detailed age groups of childhood.

For any particular period it can be seen from Tables II and III that the mortality is high in the first year of life and then declines to a minimum at ages ten to fourteen years. From the age of fifteen years onwards the mortality increases steadily with age, as is illustrated in Figure I, where the mortality rates for 1931 to 1940 have been plotted against the age on a semi-logarithmic grid.

There seems little doubt that the respiratory disease of the first year of life contains many deaths due to prematurity, although the official statistics at present cannot help us in this, since no record of birth weight or of length of gestation is available. Deaths from respiratory disease secondary to pertussis are not, of course, included in this class when pertussis has been mentioned on the death certificate; nor is disease secondary to immobilization due to some other cause, such as fracture of the femur in the elderly female.

Burnet (1952), in his Charles Clubbe Memorial Oration, discussed the biological aspects of the mortality from diseases of the respiratory system. He noted that throughout childhood a relation exists between the age and the mortality rates given by $y = Ax + B$ . . . . (1), where y is the logarithm of the mortality rates, x the logarithm of the age, and A and B are constants appropriate to the sex and period under consideration. A indeed appears to be relatively constant in the Australian experience of the epoch under survey, whereas B is a function of the period considered.

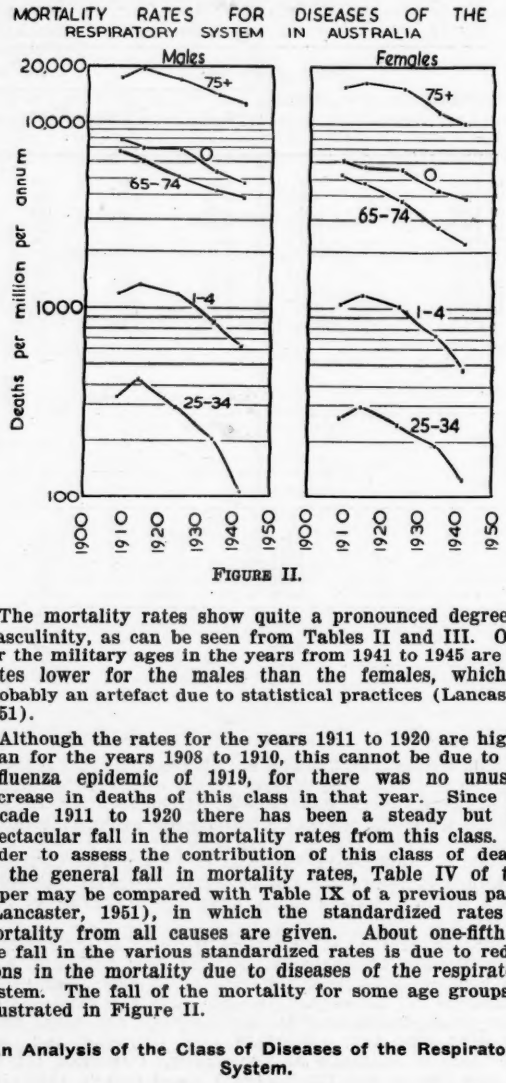

FIGURE II.

The mortality rates show quite a pronounced degree of masculinity, as can be seen from Tables II and III. Only for the military ages in the years from 1941 to 1945 are the rates lower for the males than the females, which is probably an artefact due to statistical practices (Lancaster, 1951).

Although the rates for the years 1911 to 1920 are higher than for the years 1908 to 1910, this cannot be due to the influenza epidemic of 1919, for there was no unusual increase in deaths of this class in that year. Since the decade 1911 to 1920 there has been a steady but not spectacular fall in the mortality rates from this class. In order to assess the contribution of this class of deaths to the general fall in mortality rates, Table IV of this paper may be compared with Table IX of a previous paper (Lancaster, 1951), in which the standardized rates of mortality from all causes are given. About one-fifth of the fall in the various standardized rates is due to reductions in the mortality due to diseases of the respiratory system. The fall of the mortality for some age groups is illustrated in Figure II.

An Analysis of the Class of Diseases of the Respiratory System.

Asthma.

The mortality rates for the ages in which the mortality rates from asthma are appreciable are given in Table V. Deaths in which respiratory or cardio-vascular complica-

tions are stated in the certificate to be secondary to asthma will all be coded to this rubric. But cardiac asthma will be classified under deaths of the cardio-vascular system. In Table V the death rates by age for asthma show considerable reduction over the years of the survey. Whether this represents a real change or a change in fashions of diagnosis it is difficult to say. The death rates from asthma show a pronounced masculinity at the higher ages.

TABLE IV.

The Trend of the Mortality in Australia from Diseases of the Respiratory System.

Period.	Sex.	Death Rate per Thousand per Annum.			
		Crude Death Rate.	As Standardized on to the Enumerated Population of England and Wales, 1901.	As Standardized on to the Life Table Population Derived from the Australian Census of 1933.	As an Equivalent Average Death Rate for Persons Aged Under 65 Years.
1908 to 1910	M.	1·23	1·20	2·08	1·00
1911 to 1920	M.	1·34	1·28	2·20	1·12
1921 to 1930	M.	1·19	1·09	1·88	0·96
1931 to 1940	M.	1·01	0·84	1·50	0·74
1941 to 1945	M.	0·89	0·67	1·26	0·54
1908 to 1910	F.	0·90	0·97	1·88	0·65
1911 to 1920	F.	0·94	0·99	1·92	0·67
1921 to 1930	F.	0·86	0·86	1·67	0·57
1931 to 1940	F.	0·73	0·65	1·26	0·44
1941 to 1945	F.	0·68	0·53	1·06	0·34

Lobar Pneumonia, Pneumonia and Bronchopneumonia (Including Capillary Bronchitis).

It is clear from definitions of the "International List of Causes of Death" and from a consideration of deaths in successive years in *Demography*, the annual publication of the Australian Bureau of Census and Statistics, that pneumonia of the earlier periods is equivalent to lobar pneumonia together with pneumonia unspecified of the later periods. I have followed the deaths by age through for this rubric, for it might be expected that this would be the most sensitive index of the introduction of the sulphonamides and antibiotics. No dramatic fall can be noted in the rates, although after 1943 the fall already present is accelerated. The sulphonamides were introduced in America and England in 1936, but were still rather a novelty in Australia before the outbreak of war; during the early part of the war their use was somewhat restricted because of shortages. It is evident from consideration of the pneumonia deaths that the falls in mortality from diseases of the respiratory system were almost independent of the introduction of chemotherapy. Undue prominence has often been given to the effect of medical advances in therapy by authors discussing reductions in mortality. The death rates from lobar pneumonia are given in Table VI. In this table are included deaths from pneumonia in the earlier periods, and deaths from lobar pneumonia together with pneumonia (unspecified) in the later periods. The mortality from lobar and unspecified pneumonia is also given for the years 1946 to 1948, in order to give an idea of the continued fall since 1945, which was possibly enhanced by the introduction of the antibiotics. Similar findings are evident for bronchopneumonia, but the falls in mortality are less pronounced.

Other Respiratory Diseases.

All deaths from diseases of the respiratory system are analysed into the individual diseases in Table VII, the decade 1931 to 1940 being used as representative of the experience over the years from 1908 to 1945. The pneumonias, bronchitis and pleurisy account for about 90% of all deaths in the class, so that the class has not been further analysed. Among other diseases of the respiratory system are included the pneumonokonioses, which, of course, are usually occupational. This latter fact accounts for the very high masculinity of deaths from "other diseases" shown in Table VII. It is unfortunate that there is no separate rubric for bronchiectasis, as it might have been possible to assess the importance of pertussis in causing mortality in later life.

TABLE V.

The Mortality in Australia from Asthma.

Period.	Sex.	Deaths from Asthma per Million per Annum at Ages (Years).				
		45 to 54	55 to 64	65 to 74	75 and Over.	All Ages.
1908 to 1910 ..	M.	54	167	529	993	47
1911 to 1920 ..	M.	52	150	380	805	42
1921 to 1930 ..	M.	54	114	248	565	35
1931 to 1940 ..	M.	27	75	137	249	22
1941 to 1945 ..	M.	27	71	110	213	22
1946 to 1948 ..	M.	35	66	106	148	22
1908 to 1910 ..	F.	43	116	314	518	28
1911 to 1920 ..	F.	40	84	231	445	24
1921 to 1930 ..	F.	25	66	172	355	22
1931 to 1940 ..	F.	24	44	84	154	17
1941 to 1945 ..	F.	25	46	62	131	19
1946 to 1948 ..	F.	32	33	62	110	20

Epidemiological Considerations on Respiratory Infections.

The falls of mortality at practically all ages from respiratory infection are pronounced. Yet they occurred over an era when there was no effective therapy available and at a time when public health measures directed against them were few. It is notorious that under modern conditions the spread of the common infection, coryza, is quite uncontrolled. More general explanations must be sought. It is likely that general improvements in well-being in the community are responsible, for over the years from 1908

TABLE VI.

The Mortality in Australia from Pneumonia (Pneumonia Unspecified and Lobar Pneumonia).

Period.	Sex.	Deaths from Pneumonia per Million per Annum at Ages (Years).									
		0 to 4	5 to 14	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 and Over.	All Ages.
1908 to 1910	M.	801	84	158	247	439	760	1076	2070	3531	482
1911 to 1920	M.	902	90	168	293	492	760	1131	1809	3795	519
1921 to 1930	M.	879	78	133	192	383	666	976	1850	4461	485
1931 to 1940	M.	629	67	85	125	252	452	826	1498	3491	385
1941 to 1945	M.	475	33	32	52	110	201	605	1220	2978	286
1946 to 1948	M.	321	22	20	29	72	210	467	1040	2283	243
1908 to 1910	F.	635	69	98	164	288	401	600	1618	3337	328
1911 to 1920	F.	701	81	109	201	275	334	583	1361	3184	334
1921 to 1930	F.	684	78	94	152	256	311	546	1371	3565	336
1931 to 1940	F.	503	61	68	101	159	225	402	1032	2758	268
1941 to 1945	F.	381	26	32	51	81	131	268	673	2273	198
1946 to 1948	F.	265	15	25	31	52	120	206	554	1908	177

to 1945 there has been a considerable advance in educational standards, and the value of elementary hygiene and medical care is much more widely appreciated. It may be that this has led to a lessened risk of infection or to increased well-being in indirect ways. Improved conditions may have led to less fatigue and stress in industry. Housing has improved. Public health and other measures, which have lowered the attack rates for other diseases, may well have been a factor acting indirectly. Nutritional standards have certainly improved, and there is a better distribution of the protective proteins. The smaller family units over the later years of the survey have also probably acted in the same direction by diminishing the attack rates in the young. Many of these ecological and hygienic factors have been discussed by Burnet (1940 and 1952).

TABLE VII.

The Deaths in Australia from Diseases of the Respiratory System.

Disease.	Percentage of Deaths in the Years 1931 to 1940.	
	Male.	Female.
Diseases of the nasal fossæ and annexa	0·5	0·4
Diseases of the larynx	0·5	0·4
Bronchitis (all forms)	12·4	13·6
Bronchopneumonia	30·9	34·6
Lobar and unspecified pneumonia ..	38·3	36·7
Pleurisy	3·5	2·4
Congestion and hæmorrhagic infarction of the lung	5·4	8·2
Asthma	2·2	2·4
Pulmonary emphysema	0·3	0·1
Other diseases (excluding tuberculosis and cancer)	6·0	1·2

SUMMARY.

The mortality from influenza in Australia has been briefly outlined. Reductions in the mortality from diseases of the respiratory system account for about one-fifth of the general decline in mortality from all causes that has occurred in Australia over the years from 1908 to 1945. Probably the greater part of these reductions have been due to non-specific environmental factors. The introduction of the sulphonamides has accelerated the decrease. The reductions due to the antibiotics have probably been experienced only since 1945.

ACKNOWLEDGEMENTS.

This paper is published with the permission of the Director-General of Health, Canberra, Dr. A. J. Metcalfe.

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Reports of Cases.

AN UNUSUALLY ELUSIVE APPENDIX.

By R. M. CROOKSTON,

Camden, New South Wales.

ABNORMALITIES of position of the caecum are common enough, but the following case, in which a short length of the ileum, the caecum with appendix and ascending colon were all entirely extraperitoneal organs, seems worth mentioning.

On April 21, 1953, I was asked to examine a young man, aged twenty-two years, who had had persistent abdominal pain for about twelve hours. He had gone to bed the night before feeling quite well, but had been awakened in the early morning by pain. It was felt on both sides and not localized, though there was some suggestion that it was rather below than above the umbilicus. He vomited without relief, and later he vomited again and had two small bowel actions, described by him as diarrhœa. The pain persisted and changed in character from a background of discomfort with colicky spasms, to a constant, lower abdominal bilateral and increasing pain, which, when I examined him at about 8 p.m., was rather more on the right side than on the left. Altogether, this was a reasonably typical history of the onset of acute appendicitis.

He looked ill and a little flushed, had a full "febrile" pulse with a rate of about 90 per minute, and a temperature rise to a little over 100° F. There was deep tenderness on the right side below McBurney's point, but no rigidity of the rectus muscle. On rectal examination a very tender mass was felt to the right. The presence of a pelvic appendix was a fairly obvious diagnosis, and operation was not delayed.

An incision was made, planned to allow of extension; but even with adequate exposure, neither caecum nor appendix could be found in any position. There were found a pelvis full of small intestine, a Meckel's diverticulum about four inches long causing no trouble, a low obtrusive transverse colon, and a demonstrable hepatic flexure. The right iliac fossa was empty of any sign of caecum and covered by smooth, flat-lying peritoneum. That the appendix was not high or low or left-sided was clear, and that the right iliac fossa was empty of any projection was beyond question.

Not to be able to find an appendix gives one a peculiarly frustrated and helpless feeling, and in this case the indications were clear enough that the appendix must be found and removed. As a Meckel's diverticulum, when present, is usually found about two feet from the ileo-caecal junction, this was used as a starting point, and the ileum was traced down to a point where it disappeared beneath the peritoneum covering the iliac fossa. The external peritoneum was incised as if for approach to the ureter, and after about two inches had been stripped down, a small, yellowish nodule, previously felt through the peritoneum and thought to be a lymphatic gland, was found to be the tip of an acutely inflamed appendix, which fitted closely for about three inches round a small caecum of the fœtal type.

The entire caecum, about two inches of the ileum and the whole of the ascending colon up to the hepatic flexure were neatly tucked away in the retro-colic gutter beneath the peritoneum, and were neither visible nor palpable in the abdomen.

I wonder whether this kind of thing is one reason for the occasional failure to find the appendix.

DIFFUSE CARCINOMA OF BREAST.

By JAMES MACRAE YEATES, F.R.C.S.,

Sydney.

Clinical Record.

THE patient was a slight woman, aged forty years, who was referred by Dr. A. Rumore. She complained that her right breast had become heavier than normal about six weeks previously. She had not noticed a lump nor had there been any pain.

Examination showed that the right breast was diffusely enlarged, being about half as large again as the left breast. Faint but definite *peau d'orange* was visible over a wide area surrounding the nipple. The nipple itself was evenly retracted. Palpation revealed that the entire breast was diffusely enlarged and that it felt firm and heavy, particularly in the upper part. No definite localized lump could

be felt. The central group of axillary lymph nodes appeared to be rather larger than those on the left side.

In view of the short history and absence of a lump it was thought that such a diffuse lesion might be due to inflammation rather than to neoplasm. She was examined again two weeks later, when the breast was no better and even a little larger.

A provisional diagnosis of carcinoma was made and operation was performed on January 7, 1952. Examination of a frozen section of a biopsy specimen revealed the presence of scirrhous carcinoma. The operation was then continued as a radical mastectomy with particularly wide removal of skin. The pathological report was as follows:

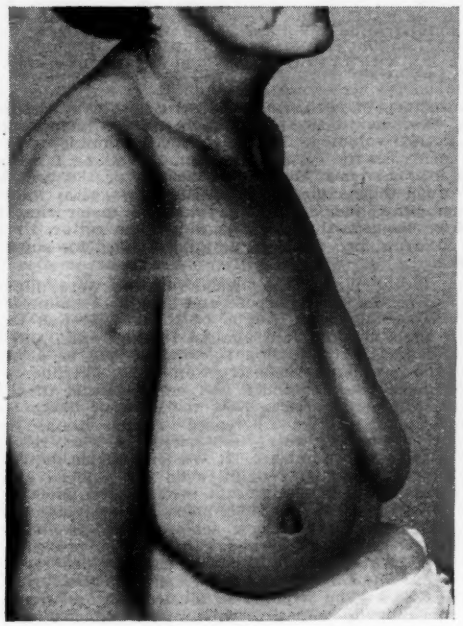

FIGURE I.
Right breast before operation in January, 1952.

> The specimen consisted of a breast removed by radical amputation. In the upper half was a large scirrhous carcinoma. There were two main masses of growth each 4·0 cm. in maximum extent with numerous interconnecting bands of growth occupying about half the breast. The cut surfaces of the growth exuded yellowish creamy material from what appeared to be dilated ducts. Numerous hard enlarged lymph nodes were present in the attached axillary tissue.
>
> Sections confirm the diagnosis of carcinoma. The growth is both diffusely infiltrating connective tissue, as scirrhous carcinoma, and lying within tubular spaces. Many of these are lymphatics; others appear to be ducts. Four lymph nodes examined are extensively involved with metastatic carcinoma.

The patient was discharged from hospital on the nineteenth day after operation. She was then referred for a course of irradiation, and received a daily dose for five weeks, and again in May for four weeks. X-ray examination of her chest on May 1, 1952, revealed no abnormality.

At routine monthly examinations her condition was passed as satisfactory until September, when a slight swelling was noticed in the left breast. She was admitted to hospital on October 16. At this date the lateral half of the left breast was diffusely enlarged and heavy, and there appeared to be a mass measuring about eight by 10 centimetres in the lower lateral quadrant. There was no *peau d'orange* or skin fixation. The regional lymph nodes were not considered to be enlarged. Œdema of the right arm was present. Radiographic examination of the chest and bones revealed no abnormality.

Palliative simple mastectomy was performed on October 20. The patient was discharged from hospital on November 1. The pathological report was as follows:

> The specimen consisted of the left breast removed by simple mastectomy. The cut surface showed radiating fibrous septa which contained scattered firm areas, some of which showed small cystic spaces. Also received was a piece of breast tissue measuring 5·0 c.m. × 3·0 c.m. × 2·0 c.m. which contained several firm areas of tissue the same as that described above. Seven sections taken from the two specimens show widespread scirrhous carcinoma. Clumps of tumour cells are prominent in lymphatic vessels. Many of the ducts are cystic, but convincing evidence of intraduct carcinoma has not been found. The growth is similar to that found in the right breast in January, 1952, and is probably metastatic.

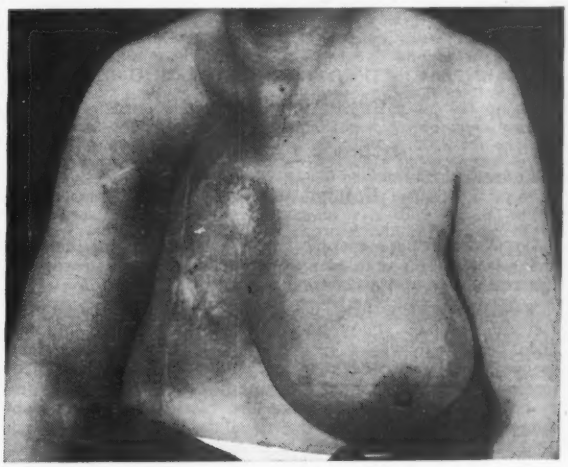

FIGURE II.
Left breast before operation in October, 1952.

It should be explained that the additional piece of tissue referred to in the foregoing report was removed from near the mid-line of the chest. It was thought to be subcutaneous fat beyond the right border of the left breast. It was removed with a view to proving that the carcinoma had actually, and not only apparently, spread directly across from the right breast to the left.

Discussion.

This case serves as a reminder that carcinoma can exist in a breast in a form more subtle than the familiar localized hard lump (so-called "scirrhous"). In this patient there was no true lump, and the very diffuse mass was certainly not hard. It seems almost certain that this carcinoma was multicentric in origin.

In view of such widespread local growth and such extensive involvement of the axillary lymph nodes, it is not surprising that malignant cells soon made their appearance in more remote parts of the body. It is of particular interest that the other breast was first to show the signs of invasion, but the importance and frequency of this mode of the spread of carcinoma of the breast have been emphasized previously (Yeates, 1953).

Examination of microscopic sections cut from the subcutaneous tissue near the mid-line of the body revealed heavy involvement by carcinoma, proving almost conclusively that the left breast was invaded by direct spread from the right breast. This fact shows that if simultaneous prophylactic (non-radical) removal of the "normal" breast during the radical operation on the cancerous breast is contemplated, the entire procedure should be *en bloc*.

Had the first operation in January been extended in this way, the result would surely have been better.

In conclusion, it may not be out of place to state that it is the writer's conviction that breast disease suffers from an excess of descriptive terms which confuse rather than clarify. It is for this reason that the simple word "diffuse" has been used in the title to this report.

Acknowledgement.

Dr. Norman Rose, Medical Superintendent of Sydney Hospital, has kindly given permission for the publication of this case report.

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CONGENITAL HYPERTROPHIC PYLORIC STENOSIS IN IDENTICAL TWINS.

By LESLIE P. WAIT, M.D.,

Honorary Physician to In-Patients, Royal Children's Hospital, Melbourne.

CONGENITAL hypertrophic pyloric stenosis in identical twins is considered to be sufficiently uncommon to warrant the recording of its occurrence.

Twin boys, the first born, were examined by me in December, 1950. They were aged twelve weeks, and had been born four weeks prematurely. Symptoms of pyloric stenosis had been present for six weeks and had commenced practically simultaneously in both infants. The symptoms and course of the illness were also identical in both. The symptoms conformed to the usual description of pyloric stenosis as outlined in standard pædiatric text-books.

The birth weight of one twin was five pounds twelve ounces, and his weight on admission to the Children's Hospital was seven pounds. The birth weight of the other twin was five pounds one ounce, and his weight on admission to hospital was six pounds thirteen ounces. Examination revealed them to be infants identical in appearance, even though emaciated and very ill. Both displayed obvious visible gastric peristalsis, and an easily palpable pyloric tumour was present in each infant. Even the hæmoglobin and blood electrolyte values were determined as practically identical. One twin had a capillary hæmangioma on the left arm and the other had a similar malformation on the left buttock.

After resuscitative treatment with blood transfusion and intravenous administration of glucose saline solution, the twins were operated on by Mr. J. G. Whitaker. In both babies a large pyloric tumour was found, there being no appreciable difference in the degree of pyloric hypertrophy as disclosed by laparotomy. Rammstedt's operation was performed.

The post-operative course of the diminutive patients was uneventful. At the present time the boys, aged two years, are very well.

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Surgical Care: A Handbook of Pre-Operative and Post-Operative Treatment. By Ronald W. Raven, O.B.E. (Mil.), F.R.C.S.; Second Edition; 1952. London: Butterworth and Company (Publishers), Limited. Sydney: Butterworth and Company (Australia), Limited. 8½" x 6", pp. 448, with 68 illustrations. Price: 52s. 6d.

RONALD W. RAVEN'S book has been considerably altered and improved in the second edition. Chapters not directly bearing on pre-operative and post-operative treatment have been left out and their place has been taken by accounts of the new "surgical physiology". The opening chapters deal with such subjects as shock, hæmorrhage, protein deficiency, water balance *et cetera*. Each type of operation is then dealt with separately. Useful chapters have been added on surgery in the aged, and on preparation for radiological investigations.

The author possesses the art of clear and succinct exposition and says everything that has to be said in the shortest possible way. This is a well-balanced book and the advice given is always sound. In spite of the author's power of lucid condensation there are over 413 pages. It is possible that the next edition may no longer be a handbook.

History of the Second World War: United Kingdom Medical Series. Editor-in-Chief, Arthur S. MacNalty, K.C.B., M.D., F.R.C.P., F.R.C.S. "The Army Medical Services Administration", Volume I, by F. A. E. Crew, F.R.S.; 1953. London: Her Majesty's Stationery Office. 9½" x 6½", pp. 552, with 15 illustrations and six text figures. Price: £2 10s.

THE history of the Army Medical Services in the Second World War has been planned on a very comprehensive scale in six volumes. Two deal with administration, the remainder with the actual campaigns. Volume I traces the decline of the Army Medical Services after the first World War, and their subsequent resurgence with increasing responsibilities and expanding functions under the threat, and later the actual impact of war. The editor, Professor F. A. E. Crew, has set a very high standard for subsequent volumes.

After World War I the armed services were unpopular. They had served their purpose and should be maintained on a minimal scale. The League of Nations, it was thought, was an effective safeguard against further wars, and whatever remained of the national wealth should be devoted to social and economic reconstruction, long overdue. Rigid retrenchment was demanded and enforced and in this the medical services shared. New methods of diagnosis and treatment necessitated increased rather than lessened expenditure, but the authorized personnel were reduced to less than pre-war numbers. It was impossible, however, to find sufficient candidates to fill even the reduced establishments, so unattractive to recent medical graduates had the Royal Army Medical Corps become. Lack of junior officers gave increased work to their seniors, and discontent, with frequent resignations, resulted. In 1924 the projected competitive examination was unnecessary, because there were only seven candidates for forty vacancies in the Royal Army Medical Corps. The strength of medical officers was reduced to a level quite incompatible with military efficiency. Training in particular was seriously restricted, a fact which had very serious consequences when expansion of the field force later became imperative. However, retrenchment remained the rule and was even more rigidly enforced when the world-wide financial stringency of 1931 made further economies essential. The British Medical Association, seriously disturbed not only by the lack of recruits for the Royal Army Medical Corps, but also by the great disabilities of serving officers, commenced negotiations with the War Office, which continued for fifteen years, in an endeavour to have these conditions remedied. Mainly because of financial considerations progress was slow, and it was not until 1934 that a scheme was introduced which offered any prospect of success. It was agreed that improvement was necessary in two directions—increased remuneration and particularly improved professional opportunities. The scheme provided for increased pay, short-term commissions, followed by either a gratuity or a permanent appointment with greatly increased opportunities for clinical experience, post-graduate training and specialization. This proposal produced an ever-increasing number of acceptable candidates for commissions and solved temporarily one of the main problems of the Royal Army Medical Corps and at a very opportune moment, for the early optimism had faded and it became increasingly obvious that another war was inevitable and that the enemy in his preparations had got off to a flying start. An expeditionary force of four contingents was planned—home defences were to be extended and modernized. In all these projects the Army medical services were deeply implicated. Enlistment of medical officers and other ranks was limited only by personnel offering; equipment was built up as rapidly as possible, training was intensified and increased hospital accommodation was planned. In this regard the rival claims of the War Office and the Ministry of Health were in conflict. The Army insisted rightly on the supreme importance of the treatment of military casualties in military hospitals; the Ministry emphasized the prior

claims of the estimated large numbers of air raid casualties. In the end, as frequently happened during the war, the views of the Ministry prevailed and the Army relinquished its claims to 25 of 29 projected general hospitals. In return the Army received a guarantee that civil hospitals, or portions of them as required, would, with equipment and staff, be made available for Army patients at forty-eight hours' notice.

When general mobilization was proclaimed, rearmament was incomplete, mobilization and operational plans were in a state of transition: medical staffs were at best 10% below establishment and most of the multifarious medical duties at home incident to mobilization were in the hands of civilian practitioners and officers recalled from retirement.

The Army Medical Directorate had already been reorganized to incorporate improvements suggested by experience in World War I and renewed efforts had been made to secure for the D.G.A.M.S. a seat on the Army Council with as little success as similar efforts to have the D.G.M.S. admitted to membership of the Military Board of the Commonwealth Military Forces in Australia. Mobilization entailed a great and ever-increasing expansion of the Directorate with a multiplicity of directors, specialists and later consultants whose advent brought up new problems relating to status, duties, rank and pay. These additions and expansions at last constituted fifteen branches, "a bewildering array of activities best described as a series of vertical channels, lacking efficient lateral cohesion". Coordination was improved, and in home commands particularly there was increasing delegation of authority to D.D.M.S. with knowledge of local conditions and requirements. Various suggestions were made with a view to improving the efficiency of the Directorate, mostly involving extensive reorganization, but none were considered practicable. The machine worked, but its direction imposed an almost superhuman task on the D.G.A.M.S. The problem of allotment of available medical manpower to meet rival service and civilian needs is discussed very fairly and at great length. This was the function of the central Medical War Committee of the British Medical Association which with its local committees followed almost exactly the same procedure as that of the medical coordination committees in Australia. Their decisions were not always favourably received, and various committees were established to investigate the problem. The suggestions made included utilization of alien medical practitioners, of senior students and volunteers from the United States of America and Dominions, improved coordination between the services and in particular employment of non-medical officers wherever possible. The crisis came in 1943 when with demands at their peak the available resources were more precarious than ever. In this emergency the Lord Privy Seal was appointed to investigate the basis on which service demands had been calculated and how best the limited resources available could be utilized. This he continued to do until the end of the war with, it would seem, a definite bias in favour of civilian requirements. However this may be, no doubt because of his personal and official prestige, his recommendations, which always urged severe reductions in service demands, seem invariably to have been adopted and enforced by the cabinet. When the Deputy Directors of the Medical Services were asked for suggestions as to how administrative work might be reduced, one of the points stressed was the vast amount of time wasted by medical officers in the investigation of complaints, mostly ill founded and trivial, initiated or supported by members of Parliament. This was a constant source of exasperation and annoyance also to medical officers doing administrative work in the A.A.M.C. These complaints, 90% of them unfounded and often quite stupid, were made with the object of embarrassing the Government or retaining the support of importunate though undeserving constituents, but as the editor points out, any plea for respite from the multiplicity of these investigators was from the outset a forlorn hope. In actual fact the whole available medical manpower in the country was not sufficient to meet the military and civil needs in time of war. The ever-extending scope and range of army commitments, the necessity to provide for air raid casualties, the temporary threat of imminent invasion, the ever-present possibility of extensive epidemic disease were some of the factors which made it difficult for both parties to estimate accurately their personnel requirements and both tended to budget for the peak need. Some at least of those who finally decided the allotment of medical officers had an imperfect knowledge of the function and duties of the men in the services whom they regarded as just "doctors in uniform". The result was that the medical services never received the allotment of medical officers regarded as essential for efficiency. There was throughout the war a strong and widely held opinion that the Army demands were excessive and its use of medical officers extravagant, that whatever economies were effected, much more could have been done, that the risk of breakdown if its requirements were not met was grossly exaggerated. These, however, are questions which the editor agrees "invite differences of opinion". A tribute is paid to women medical practitioners, whose applications for employment in the fighting services had before the war been refused because of limited scope for them in the armed services, and the great needs of the civilian population. However, the pressure was continued, and when war broke out permission had been granted for their employment in the armed services, but for some time their status, rank, duties, pay and responsibilities were ill defined. As the scope of the Women's Services increased (there were 227,200 enlisted in the army at the end of the war) an order in council authorized commissioned rank for women and thereafter medical women were given commissioned rank in the A.T.S. There was some disappointment because they were not officers of the R.A.M.C., but in spite of this they formed "a service unsurpassed by any in professional performance and in the devotion of its members". Deficiencies in manpower made it essential that every man should be employed in a posting in which his mental and physical qualities could be best utilized. To do this an attempt was made "to devise a series of military medical categories interpreting medical grading in terms of military employment, and correlated to the needs of the various arms of the services". This was a very difficult problem. The steps taken to solve it, and the reasons why they did not succeed, are explained in detail in a chapter which is very informative but not always easy reading. The underlying principles of the scheme were apparently not always understood by some of those responsible for administering it. As anomalies became apparent a flood of amendments and revisions were issued and in the end the scheme became too involved and overweighted with detail. The four original categories used at the outset to indicate the capacity of a soldier developed in time into a series of categories which with its various subdivisions and qualifications numbered no fewer than 72. Medical officers were more concerned with the presence of physical defects than in estimating the functional disability, if any, which they caused. The "will to win" is the main factor in determining a soldier's usefulness in the army. A man who is anxious to serve will carry on in spite of quite serious disabilities. For instance, when "two highly trained, first class battalions had been subjected to a severe test, it was found on inspection that 25% of them had defects of the feet that should have placed them in categories below A; yet not one had failed to complete the test and none had complained of any disability". Dissatisfaction with existing schemes directed attention to the Pulhems system which had been very successfully introduced in Canada. It involved correlation of two factors—a qualitative assessment of the individual soldier as to physical qualities, intellect and temperament and a qualitative analysis of occupational requirements. When its use was first proposed circumstances were not favourable, but a series of trials and experiments was arranged; after two years the scheme was introduced for troops undergoing basic training and some 14,000 troops were so classified. This test was too limited to permit an estimate of the suitability of the system for adoption in the British Army. However, an Interdepartmental Committee from the services and the Ministries of Labour and Supply did in 1945 unanimously recommend the adoption of the Pulhems system by the three services and it has been extensively used since that time. This system is more complicated than the scheme of medical examination of army personnel at present in use in Australia. Its successful application would necessitate special training of medical officers with some knowledge of army standards. To apply it at a time of general mobilization, when any medical officer available must be utilized, would invite disaster. Some of the problems requiring solution by the medical services in the field are discussed—removal of casualties from armoured fighting vehicles, the development of the field dressing station, the provision of a medical service for airborne troops, and in particular air evacuation of casualties. Even before the outbreak of war repeated efforts had been made to secure allocation of aircraft as ambulances particularly in the Middle East—but always without success. For a time in the desert the only air ambulances available were two operated by the R.A.A.F. Gradually, however, an increasing number of patients were carried by aircraft as back loading. How this plan expanded until in 1944 one-third of the casualties evacuated to the United Kingdom from the Western Front were airborne makes a very interesting story. But the army medical services were never given any air ambulances. One point requires clarification.

A directive is quoted enumerating categories unsuitable for travel by air—this includes thoracic and abdominal wounds (page 492), but later (page 505) these are quoted as conditions appearing to derive most benefit from air transit.

The volume is encyclopædic in its scope and there are few aspects and problems of army medical administration and policy at the highest levels that are not discussed. However, its appeal and interest will not be limited to those who have been or are at present involved with these problems. For as the editor claims: "In it there surely must be much of value to those who find themselves concerned with the shaping of medicine and its allied professions to the needs of a civilian community in times of peace." The R.A.M.C. is fortunate in having available Professor Crew and his collaborators to describe so clearly and with so much insight the development of the various factors which enabled it to make "a contribution to victory beyond all calculation".

Recent Advances in Anæsthesia and Analgesia (Including Oxygen Therapy). By C. Langton Hewer, M.B., B.S. (London), M.R.C.P. (London), F.F.A.R.C.S.; Seventh Edition; 1953. London: J. and A. Churchill, Limited. 8¼" × 5¼", pp. 448, with 169 illustrations. Price: 30s.

A WARM WELCOME will be given to this book. In the five years that have passed since it was last published new drugs have been discovered and there have been many advances in technique. It is impossible to review them in detail as fresh information has been given on many subjects; among others are total spinal block, Gordh's non-clotting intravenous needle, new relaxants, hypotensive drugs, plasma substitutes, anæsthesia for cardiac surgery and the value of a post-anæsthetic recovery room. To meet with new material it has been necessary to revise and rewrite much of the old text, to introduce 52 new figures and to extend the book by fifty pages.

Controlled hypotension is discussed at length and its dangers and contraindications are given. Dr. Hewer considers that from these it must be inferred that, at the present time, controlled hypotension should be reserved for patients suffering from a fatal disease or from gross disability for the relief of which an operation is necessary which cannot be undertaken unless a bloodless field is provided.

Dr. Hewer has a very wide experience of operations for toxic goitre. He considers that basal narcosis is essential and that as a general rule either bromethol or paraldehyde should be employed. He quotes a series of 1000 cases of thyroidectomy since 1939. The patients were subjected to the paraldehyde-nitrous oxide, oxygen-adrenaline-saline technique with a mortality of two (0·2%). He adds: "It is worth noting that the patients who gave us most anxiety in the last series had been given thiouracil before the danger of this drug had been fully realised."

The section on recent work on the ethers contains much new information. Despite frequent prophesies to the contrary, diethyl ether continues to enjoy great popularity. The reasons for this are its great safety margin and the fact that in moderate doses it is a stimulant of the sympathetic system with consequent relaxation of the bronchial tree.

A comprehensive list of local anæsthetic agents is given with their synonyms and trade names. Their composition, mode of action and contraindications are stated in detail. There is, however, no mention of "Andolor" or ethocaine which have been used to prevent post-operative pain and are said to be effective for as long as one to three weeks. Their use after upper abdominal operations may lessen the incidence of respiratory complications.

In the section on resuscitation and primary cardiac failure the author points out the necessity for a definite prearranged plan. Speed is essential and some anæsthetists will consider that to delay cardiac massage for two or three minutes is too long. Apgar has found that by reducing this time to 60 to 90 seconds the recovery rate has been greatly increased. If there is delay, the heart may respond, but the result will be cerebral anoxia and consequently many patients will die without recovering consciousness.

The section on anæsthetic charts and records deals with the need for the use of standardized forms. By this means it would be possible to correlate the work of others and to obtain information sufficient to be of statistical value. Hewer recommends Nosworthy's combined chart and index as simple, cheap and useful in the teaching of students. He considers that the universal adoption of some such system would constitute one of the most important "recent advances" in the specialty.

The book is well illustrated, has a good index and sustains the high standard of the previous editions. It is easy to read, eminently practical and most valuable as a book for reference.

Modern Medical Monographs: Chronic Pulmonary Emphysema: Physiopathology and Treatment. By Maurice S. Segal, M.D., and M. J. Dulfano, M.D.; 1953. New York: Grune and Stratton. 9" × 6", pp. 190, with 31 illustrations. Price: $5.50.

CHRONIC PULMONARY EMPHYSEMA is perhaps the most distressing of the diseases of the lungs. Not a great deal is known about its causation; diagnosis is inexact and treatment unsatisfactory. Any fresh light that is thrown on the condition therefore is welcome.

In "Modern Medical Monographs: Chronic Pulmonary Emphysema", Maurice S. Segal and M. J. Dulfano, working at the Tufts College Medical School and the Department of Inhalational Therapy, Boston City Hospital, have written an account of their research in this difficult subject and produced a book of very considerable value. The authors state in the preface: "A proper understanding of the clinical course of chronic pulmonary emphysema and rehabilitation of the patient by application of the measures discussed in the book require physiological integration. The gasping cyanotic hypoxic patient may suffer harm or even die if the therapeutic agent he needs most—oxygen—is improperly administered. There are methods by which the true extent of the disease may be determined with considerable accuracy, but unfortunately these methods are beyond the reach of most patients. If they could be applied, it should be possible to give the patient with chronic pulmonary emphysema a much more optimistic outlook than was previously possible."

This sums up the content of the book very well. Although the methods described may be beyond the reach of most patients, and certainly are above the heads of most physicians, still there is much of value to be gained by a careful study of this monograph. In this country there are many patients suffering from chronic bronchitis, asthma and emphysema, the treatment of which is altogether unsatisfactory. It would be a good thing if there was in Australia at least one clinic which could put into operation the methods of investigation and treatment described in this book. Team work of the highest order would be needed and the assistance of a well-equipped and cooperative physiology department.

Although much of the book is concerned with physiological considerations, clinical aspects are by no means neglected. Indeed the chapters on clinical concepts and treatment are very good. Management of the patient covers a wide field, including symptomatic treatment, therapeutic aerosols and control of infection, the use of ACTH and cortisone, oxygen therapy, mechanical respiration, pneumoperitoneum, and breathing exercises.

The book presents work of an advanced kind and should provide a stimulus to physicians with a special interest in respiratory disease.

The Sulphonamides and Antibiotics: In Man and Animals. By J. Stewart Lawrence, M.D. (Ed.), M.R.C.P., and John Francis, M.Sc., M.R.C.V.S., with the assistance of Arnold Sorsby, M.D., F.R.C.S., and Philip G. Scott, F.R.C.S.; Second Edition; 1953. London: H. K. Lewis and Company, Limited. 9" × 6", pp. 494, with 38 illustrations. Price: 42s.

THIS book, published in February, 1953, gives an up-to-date résumé of present knowledge of the sulphonamides and antibiotics in man and animals. The authors discuss the development of resistance in different organisms to both sulphonamides and antibiotics. They state that, fortunately, resistance to all these therapeutic aids does not develop. While many organisms become resistant to sulphonamides, the meningococcus never does. Resistance to aureomycin and chloromycetin is slow to develop, moderate in degree and seldom permanent. Resistant organisms spread from patient to patient and from carriers among the medical and nursing staff to the patient. The authors point out that a rigid aseptic technique is just as important when chemotherapy is being used as it was before its introduction. The authors mention combinations of sulphonamides such as "Sulphatriad", including sulphathiazole, sulphadiazine and sulphamerazine. In some countries sulphathiazole is thought to be so toxic as to be condemned. Sulphadiazine, sulphamerazine and sulphacetamide have been recommended by Lehr on good grounds. The simpler combination of sulphadiazine and sulphamerazine, which shows small toxicity, is not mentioned. Toxic effects of the sulphonamides, such as drug fever, rashes and renal damage, are

considered at some length. It is stated that para-aminosalicylic acid, used in tuberculosis, can be given for a long time without ill effect. With penicillin, dosage has increased, 200,000 to 500,000 units daily being commonly used. For furunculosis, carbuncles and other cutaneous lesions the larger doses give no increased benefit. For syphilis one mega unit daily and for bacterial endocarditis two mega units daily are advised. Prolonged treatment is necessary for the latter condition and for osteomyelitis. Procaine penicillin in oil with aluminium monostearate gives prolonged action up to twenty-four hours with a dose of 300,000 units, and up to five days with a single dose of 2,000,000 units. Streptomycin, neomycin, aureomycin and terramycin are considered in turn. In the second half of the book the author deals with individual infections and their treatment, and to an extent with infectious diseases of animals.

A Manual of Clinical Allergy. By John M. Sheldon, M.D., Robert G. Lovell, M.D., and Kenneth P. Mathews, M.D.; 1953. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 10″ × 6½″, pp. 428, with 27 illustrations. Price: £4 0s. 9d.

J. M. SHELDON discusses allergy under the title of "A Manual of Clinical Allergy". He gives a description of allergy and its significance, a summary of the evaluation of an allergy patient and a description of the history and medical examination of an allergy patient, which is complete and includes an extensive physical and pathological survey. Complete skin testing is described. There is an evaluation of the important allergens.

Hay fever, allergic rhinitis and bronchial asthma are discussed. There seems to be little difference between hay fever and allergic rhinitis in many patients. Vasomotor rhinitis is a less complete entity. Nasal polypi are given their appropriate place. Hyposensitization and desensitization are considered at length and the dangers of this treatment are dwelt on. Mixtures of allergens, especially grasses, are discussed, and the dangers of allergic shock are emphasized. Preseasonal treatment and perennial treatment have their advocates. Small doses of antigens should be used, and reactions should indicate the need for reduced doses. Injections once or twice a week for three months are usual. This treatment, if combined with antihistamine drugs, is said to give relief in 75% or more of cases. Oral hyposensitization and bacterial vaccines are used also. There is no indication as to the frequency of success or failure by these methods. Constitutional and serum reactions due to injections are discussed at some length. Abnormal reactions to penicillin, in the skin and in general, are discussed. *Status asthmaticus* is dealt with by ACTH or cortisone, but older remedies such as iodides, epinephrine, ephedrine and aminophylline are praised. Aerosal administration of penicillin may be effective or may cause sore mouth or other troubles. Inhalation of epinephrine or the like is also advocated for asthma. Bromides, aspirin, barbiturates, stramonium, sulphonamides and a dozen other drugs are said to be helpful. Antihistaminic drugs such as "Benadryl" and 30 other American preparations are said to be helpful. Recently a British preparation, "Phenergan", was said to be most effective. Some of these are toxic. There is a chapter on drug allergy and another on dermatological aspects of allergy.

In general this book gives a good summary of allergic disorders. It emphasizes the possible dangers of indiscriminate treatment. The author seems to claim more success for allergy treatments than the clinician would support.

The 1952 Year Book of Dermatology and Syphilology (December, 1951-November, 1952). Edited by Marion B. Sulzberger, M.D., and Rudolf L. Baer, M.D.; 1953. Chicago: The Year Book Publishers. 8″ × 5¼″, pp. 444, with 67 illustrations. Price: $6.00.

THE editors of this Year Book obviously keep in mind a wider field of readers than their specialist dermatological colleagues. In fact the special article with which, according to custom, they open the volume is entitled "Present Status of ACTH, Cortisone and Compound F in Dermatologic Management: A Guide for the General Practitioner". No doubt it will be appreciated also by many dermatologists as a relatively concise summary of a large subject. An addition to the volume is a separate subsection on endocrine therapy in the section on treatment and prevention. Other material abstracted from the literature is grouped into sections on eczematous dermatitis, atopic dermatitis, urticaria and allergy, on drug eruptions, on miscellaneous dermatoses, on cancers, precanceroses and other tumours, on fungous infections, on other infections and infestations, on venereal diseases and their treatment (exclusive of gonorrhœa), on investigative studies and on miscellaneous topics. The following are among the items to which the editors draw particular attention: new knowledge of melanogenesis, of the treatment of hyperpigmentation and depigmentation, and of the malignancy of melanomata and the value of radical mutilating surgery in their treatment; the treatment of severe systemic fungous infections with stilbene derivatives; new information on the safety limits of superficial X-ray therapy and on the use of grenz rays, thorium X and radioactive isotopes; the recognition and understanding of "new" diseases, such as "cat-scratch disease" and "swimming-pool infection"; additional knowledge of common stigmata found in patients with atopic dermatitis; more fundamental information on the L.E. phenomenon, on the chemical composition of the nuclear material and on the interrelated roles of toxic serum fraction and phagocytic cells. The way in which a wide range of material is handled in this volume should help considerably to keep dermatological investigation and practice on a high level.

Plastic Surgery at The New York Hospital One Hundred Years Ago: With Biographical Notes on Gurdon Buck. By Herbert Conway, M.D., and Richard B. Stark, M.D., with forewords by John Hay Whitney, Stanhope Bayne-Jones, M.D., and Frank Glenn, M.D.; 1953. New York: Paul B. Hoeber, Incorporated. 8½″ × 6″, pp. 120, with 29 illustrations. Price: $5.00.

NOWADAYS most people are aware of the functional and psychological benefits to be gained from the delicate and ingenious operative procedures frequently carried out by expert plastic surgeons to repair facial disfigurements and deformities, whether congenital or acquired. It is not generally known, however, that ingenious methods of reconstructive surgery were employed for the same purpose in very ancient times.

Long centuries ago Hindu surgeons were called upon to restore to the individual an ear or a nose that had been briskly severed from its attachments by the keen sword of officialdom as a punishment for adultery, or even for minor misdemeanours. In the second half of the sixteenth century, Gaspare Tagliocozzi, of Bologna, was able to extend and greatly improve the techniques of plastic surgery by reason of his systematic knowledge of physiology and the new anatomy. The æsthetic results of his reconstructions were so striking that the Church authorities stepped in and officially condemned the practice as an unwarranted attempt to interfere with the handiwork of the Creator. Hence, further development in plastic surgery remained in abeyance until the new philosophy permitted its revival in the nineteenth century.

In the small book compiled by Dr. Herbert Conway and Dr. Richard B. Stark, a detailed description is given of the methods employed by a general surgeon, Dr. Gurdon Buck, at the New York Hospital in the years following the American Civil War. In some respects these methods appear to be less modern than those of Tagliocozzi, although the pioneer American surgeon performed his operations with the great advantages of ether anæsthesia and of later antiseptic notions. For the most part, Dr. Buck's plastic surgical work consisted in the repair of gross facial deformities caused by gunshot wounds, by tissue destruction from excessive dosing with mercurial drugs, by extensive tumour growths and by harelip. Throughout the book lengthy quotations are given from Dr. Buck's "Contributions to Reparative Surgery", published in 1876, and from other relevant sources of information. It is interesting to find that this versatile surgeon enlisted the professional services of a dentist in some of the prosthetic requirements for special reconstructions; and that the famous Valentine Mott was for many years a colleague at the New York Hospital.

The book has some helpful illustrations.

Practical Dermatology: For Medical Students and General Practitioners. By George M. Lewis, M.D., F.A.C.P.; 1952. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 10″ × 6½″, pp. 338, with 99 illustrations. Price: £3 11s. 3d.

THOSE who have worked with or studied under George M. Lewis would expect an excellent approach to the subject, and they will not be disappointed in this first edition. There is hardly a word wasted, and there is "meat" in every sentence.

As a complete text-book for students it could be improved upon by a few pages on the anatomy and physiology of the skin. An outstanding feature is the collection of clinical pictures. Although the number of figures is 99, most of

these are divided into several sections, so that actually there must be over three hundred case illustrations. These black and white pictures are enhanced by the use of a hand lens.

Almost without exception all the latest treatments are included and an assessment is made. No reference, however, has been made to "Atebrin" therapy in chronic discoid *lupus erythematosus*. A statement that the histology of *granuloma annulare* suggests tuberculosis will not meet with approval in this country. At least there is no clinical evidence in support of the statement.

The book is divided into 25 chapters, all of high merit, and two, one on "Fungus Infections" and the other on "Dermatologic Formulary", are especially commended.

It is a pleasure to recommend such an excellent text to all interested in the subject matter. Although especially written for medical students and general practitioners, it is also a valuable reference book for dermatologists. The printing and binding are of the highest standard.

Leptospiroses. By Otto Gsell, with Anhang bakteriologisch-serologische Methodik, by Ernest Wiesmann; 1952. Bern: Medizinischer Verlag Hans Huber. 9" × 6¼", pp. 324, with 41 illustrations. Price: 28 Swiss francs.

THIS book is an unusually thorough treatise on a group of diseases of which only one member (Weil's disease) has in the past received the attention that all of them deserve.

The monograph begins with a discussion of the general characteristics of the Leptospira and turns then to an exhaustive review of the epidemiology. Animal hosts, conditions of water and soil, the various aspects of the human infection are discussed in detail. The next part of the book deals fully with the clinical manifestations of leptospiral diseases, with their pathology, differential diagnosis, therapy and prophylaxis. In the following chapter, the individual leptospira and the specific variations of the general clinical pattern which they cause are given detailed consideration. It is of great interest that the leptospiral species which were first discovered in Australia have been observed by the author and others, in Switzerland and other parts of the northern hemisphere; and the question must arise whether the converse might not also be true, that species described in other parts of the world might also be present, yet still undiscovered, in Australia. (As a matter of fact, one such species, *L. canicola*, has just been described for the first time in Australia on June 20, 1953, on page 887 of this journal.)

After a discussion of certain forms of leptospirosis in domestic animals, a special chapter deals with the clinical importance of the differential diagnosis of the various types of Leptospira.

The appendix of thirty-seven pages by Dr. Wiesmann covers, in every detail, the microbiological and serological methods on which this study was based. A list of references of twenty pages contains, naturally, a majority of papers in the German and English languages, but work carried out in South America and Russia, in Scandinavia and Australia is well documented. There is an author's index but no subject index, the only blemish in a book that covers its subject admirably and will prove of invaluable help to any medical or veterinary practitioner interested in the problem of the leptospiroses.

Recent Advances in Pathology. By various authors, edited by Geoffrey Hadfield, M.D., F.R.C.P.; Sixth Edition; 1953. London: J. and A. Churchill, Limited. 8½" × 5½", pp. 384, with 85 illustrations. Price: 30s.

THIS book differs from the previous editions. Professor Garrod is no longer one of the authors and Professor Hadfield, apart from general editorship, contributes the chapter which deals with the liver. G. Payling Wright has written three chapters which are concerned with inflammation, hypersensitivity reactions and the reticulo-endothelial system. These chapters are up to date and very well written.

The chapter on reticulosis and reticulo-sarcoma by C. V. Harrison is a considerable improvement on that in the previous editions. However, Crohn's disease is still included as a sarcoidosis-like disease and the same case as in the previous edition is used to illustrate it. We have never seen this type of reaction in Crohn's disease. Twelve cases at one clinic in the last three years have all been due to non-specific inflammation progressing to cicatrization. The same writer has written the chapter on the cardio-vascular system. Cardiac failure, sodium retention, rheumatic carditis, Libman-Sacks endocarditis and various forms of arteritis are amongst the subjects which are discussed. Cancer research is discussed in three chapters by I. Hieger and B. D. Pullinger. These chapters summarize the state of our knowledge up to the time of writing. J. Gough writes on diseases of the lung. Carcinoma of the lung, pulmonary œdema, hæmosiderosis and the pneumonokonioses are amongst the subjects in this chapter. Renal function is discussed by Grahm M. Bull and J. Henry Dible. Anuria, oliguria and tubular necrosis occupy most of this chapter. The ductless glands are dealt with in a series of brief summaries by Peter C. Williams.

Most readers will find this an interesting and instructive book in which the latest views upon a number of subjects are presented by a panel of experts. Throughout, the accent is on function and the correlation of pathology with physiological principles; wherever possible, the results of experimental research are integrated into each account. This edition further consolidates the prestige achieved by the previous volumes.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Atlas of Tumor Pathology" (Washington: Armed Forces Institute of Pathology). Section IV—Fascicle 14: "Tumors of the Thyroid Gland", by Shields Warren, M.D., and William A. Meissner, M.D.; 1953. 10¼" × 8", pp. 98, with 82 illustrations. Price: $1.75. Section IV—Fascicle 15: "Tumors of the Parathyroid Glands", by Benjamin Castleman, M.D.; 1952. 10¼" × 8", pp. 75, with 53 illustrations. Price: 65 cents. Section V—Fascicle 17: "Tumors of the Lower Respiratory Tract", by Averill A. Liebow, M.D.; 1952. 10¼" × 8", pp. 190, with 249 illustrations. Price: $1.25. Section VIII—Fascicles 31B and 32: "Tumors of the Male Sex Organs", by Frank J. Dixon, M.D., and Robert A. Moore, M.D.; 1952. 10¼" × 8", pp. 180, with 135 illustrations. Price: $1.50. Section X—Fascicles 35 and 37: "Tumors of the Central Nervous System", by James W. Kernohan, M.D., and George P. Sayre, M.D.; 1952. 10¼" × 8", pp. 130, with 126 illustrations. Price: 90 cents.

These are further sections of the atlas, part of which has already been reviewed in this journal.

"Cybernetics: Circular Causal and Feedback Mechanisms in Biological and Social Systems: Transactions of the Ninth Conference, March 20-21, 1952, New York", edited by Heinz von Foerster, assistant editors, Margaret Mead and Hans Lukas Teuber; 1953. New York: Josiah Macy Junior Foundation. 9" × 6½", pp. 200, with 23 illustrations. Price: $4.00.

Ten different subjects are dealt with.

"The Medical Clinics of North America"; 1953. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. New York Number. 9" × 6", pp. 332, with 47 illustrations. Price: £7 5s. per year in cloth binding and £6 per year in paper binding.

The volume consists of a foreword and twenty articles dealing with "prolonged illness", by 38 authors.

"Clinical Psychiatry: For Practitioners and Students", by Ian Skottowe, M.D. (Glasgow), M.R.C.P. (London), D.P.M. (London); 1953. London: Eyre and Spottiswoode. 8¾" × 5¾", pp. 407. Price: £1 16s.

One of *The Practitioner* series of volumes; there are twelve other medical volumes in the series.

"Clinical Electrocardiography", by David Scherf, M.D., F.A.C.P., and Linn J. Boyd, M.D., F.A.C.P.; Fourth Revised Edition; 1953. London: William Heinemann (Medical Books), Limited. 8¾" × 5½", pp. 508, with 292 illustrations. Price: £2 2s.

The first edition was published in 1940; the book has been translated into Portuguese, Spanish and French.

"Office Orthopedics", by Lewis Cozen, M.D., F.A.C.S.; Second Edition; 1953. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 9½" × 6½", pp. 304, with 191 illustrations. Price: 60s. 3d.

The book deals with what is done in a consulting room or in an orthopædic clinic. The author describes procedures which he himself uses.

"A Manual of Psychiatry", by K. R. Stallworthy, M.B., Ch.B.; Second Edition; 1953. Christchurch: N. M. Peryer, Limited. 7½" × 5", pp. 322. Price: 30s.

Most of the text has been rewritten in the light of experience in the use of the book for teaching purposes.

The Medical Journal of Australia

SATURDAY, OCTOBER 31, 1953.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

GENERAL PRACTICE AND THE GENERAL PRACTITIONER.

THE status of the general practitioner and the range of his activities have recently been discussed both in Great Britain and in this country. Practically the whole of the *British Medical Journal* of September 26, 1953, has been devoted to general practice and is called a "general practice number". In Australia, some discussion has taken place about the relationship of general practitioners to the new College of General Practitioners which has been established in England and to the possibility that Australian general practitioners may participate in its activities. In Sydney, a group of practitioners has been formed to investigate the whole question, and it is hoped that we shall hear something about its activities at a later date. In the circumstances, it would seem advisable to give some thought to general practice in Great Britain on the one hand and in Australia on the other.

The special number of the *British Medical Journal* is full of interest. Every member of the Association in Australia is advised to study it with the utmost care. Of special interest are the field survey of general practice by Dr. S. J. Hadfield and the review of general practice by the General Practice Review Committee of the Association published in the supplement. Great care is taken to impress on the reader that these documents are not the official view of the Council of the Association, but that they are documents which the Council has "ordered to be printed". The Australian reader will wonder what the reason for this may be—why the Council of the Association does not wish to commit itself. As a matter of fact, Australian members of the Association who visit England return with the impression that the profession in England made a colossal mistake when it accepted service under the National Health Scheme. Of course, no official admission of such an error will be made. Be all that as it may, several outstanding facts should be noted and certain conclusions drawn for the guidance of Australians both at the present and on the future occasions that may arise. The most important feature is the report of the field survey made by Dr. Stephen Hadfield, who is one of the assistant secretaries of the Association and who was seconded from his duties that he might undertake this work. His interviewing of 188 medical practitioners and his appraisal of their methods of working called for the greatest tact and wisdom. It must have been a very wearying task, and the result has certainly earned for Dr. Hadfield the admiration and thanks of the whole profession. Dr. Hadfield's conclusions have been reinforced by the results of the postal inquiry made by the General Practice Review Committee among 12,879 general practitioner principals. This total of 12,879 represents the number who replied to inquiries. The total number to whom inquiries were sent and from whom replies could have been received was 17,616. This means that 72% of practitioners who were asked for information replied—a percentage which, if we may judge by Australian experience, was high. The leading article in the *British Medical Journal* refers to the objectivity, honesty and sincerity of purpose of the documents. A happy phrase is used when it is stated that the warts and the wrinkles are to be found in the portrait that has been painted. This is, of course, as it should be. Readers are advised, when they read the documents, to study the general impression, and if possible to fit the warts and wrinkles into their proper places. It is with the utmost satisfaction that Dr. Hadfield concludes that 90% of practitioners whom he saw are undoubtedly interested and careful in the treatment of their patients. The question whether doctors are happy is raised in the postal inquiry among general practitioner principals. The replies of 345 practitioners indicated that 54% were reasonably happy and contented, though some had qualifications to make. In the leading article it is pointed out that the inquiry was made before the introduction of the Danckwerts award. This award removed some of the financial anomalies of general practice. This means that the figure of 54% would probably be somewhat larger at present. For all that, many will agree that a medical service cannot really be regarded as satisfactory if only a little more than half of those taking part in it are happy in their work. It will be noted that five out of six practitioners, on an average, combine with their practices activity outside the day-to-day care of patients. They are said to be the more contented on this account, and since variety is the spice of life, this may easily be understood. Reference should be made to what is written in the Committee's report on the present state of the doctor-patient relationship. We are told that there is little doubt that there has been at least some deterioration in the doctor-patient relationship. This deterioration has been less in scattered country practice than in industrial practice. There is a tendency for the general practitioner to be regarded as a "supplier of medicaments" rather than as a medical adviser. This probably applies to few persons; but, as one doctor wrote, the occurrence of the few makes them appear to be many. There is a "core of patients whose behaviour does not permit the proper functioning of the doctor-patient relationship". The number is probably not large, but

taken over the whole country they are thought to be sufficient in number to give rise to the general impression that the National Health Service has brought about this deterioration. One of the chief complaints about the Service has to do with difficult patients who make unreasonable demands on the service of the practitioner. So we see how important it is if the patient has free choice of doctor that the doctor should also be able to choose his patients. In small communities this may not always be possible, but all practitioners will agree in regard to its desirability.

One of the effects of the National Health Service in England has been to accentuate division of the profession into three sections—consultants, general practitioners and departmental medical officers. The *British Medical Journal* states that one of the conclusions arising from the survey and report is that unsatisfactory relations with other medical and health workers and institutions impede the work of the general practitioner. In this, it states, the general practitioner is not free from blame. The sharp division of the profession into three sections has been mentioned. The third conclusion which is stated is that the rapid advances in medical science during the past three decades have imposed stresses and strains on all types of practice, and these have created problems of their own, the solution of which is not made easier by the inflexible structure of the National Health Service.

Having directed the attention of readers of this journal to the special issue of the *British Medical Journal* by the foregoing short statement, we turn to conditions in Australia. Doubt is sometimes expressed whether Australian medical practitioners, especially those in general practice, realize all the advantages under which they work. Dr. John Hunter, the General Secretary of the Federal Council of the British Medical Association in Australia, has just returned from a visit to Canada, the United States and Great Britain. He has attended important meetings in all these places and has also attended the meeting of the World Medical Association at Amsterdam. In London he had a unique opportunity to observe changes that had taken place since his last visit, and he also had the privilege of attending gatherings of high officials of the British Medical Association. He has returned to Australia firmly convinced that the general practitioners of this country are more advantageously placed than those anywhere else. They enjoy greater freedom in their work than others do, freedom of thought and action, and at the same time, unique opportunities to give the best possible service to members of the community. Dr. L. R. Mallen, the Australian representative on the council of the World Medical Association, has during the term of his appointment visited many countries, and he holds exactly the same views as those that have been expressed by Dr. Hunter. The scheme of National Health Service which is being introduced into this country has been the envy of practitioners in all other places where it has been described. (It was this scheme which prompted the World Medical Association to appoint an Australian as a member of its council.) The plea is therefore one for cooperation of practitioners with the Federal Council and the Branch Councils in their efforts to secure a smooth working of the scheme of National Health Service. Medical practitioners in Australia who study the account of the National Health Service in England will realize their good fortune and will make the most of it. In seizing their opportunity, they not only will be preserving the freedom of their profession, but will do the community signal service, a service in which (to quote the words of the Minister) the individual makes some effort to help himself.

Reference has been made to the intention of some Australian general practitioners to investigate the possible participation of Australian practitioners in the affairs of the College of General Practitioners in England. It is to be hoped that this will be done with a clear understanding of the conditions under which general practitioners in England are working, and that any liaison which is established between Australia and the old country in this regard will not place Australian general practitioners at any disadvantage. All members of the medical profession in Australia will consent to the statement that any steps will be welcome which may safely be taken to preserve the high status of general practice in this country, to make it a more valuable instrument of service than it is and to allow it to expand in usefulness.

Current Comment.

ANXIETY STATES AND THE GENERAL PRACTITIONER.

R. F. TREDGOLD,[1] speaking as a consultant on the management of the psychoneurotic patient, refers to the two schools of general practitioners—those who regard such patients as a nuisance, and those who consider they are worth helping. He anticipates the objection that time is too short by stating his belief that adequate early treatment of neurotics would ultimately save time and thus prove "medically and socially profitable". His main reason for referring to the two schools was not to criticize—although a note of generous forbearance is perhaps apparent—but rather to make the practical point that the consultant would like to know to which school the referring practitioner belongs before advising him on appropriate management. In fact, Tredgold's address is essentially practical. He points out that the anxiety states may be regarded as caused by internal conflict, of which the patient is frequently unconscious, or by an environmental influence of which he is conscious but to which he is unable to adapt himself fully. In the latter group, which is most suited to treatment by the general practitioner, the cause is likely to be found in the home or at work, or in some upset in financial arrangements or personal relationships. These matters are not beyond the doctor's scope if the patient is ill as a result of them. Sometimes the cause lies in worry over health itself, and one of the commonest fears, precipitated often by loss of concentration, is of insanity.

Treatment is dependent upon finding the conflict. There is no escape from a detailed history, for although the cause may often be speedily defined, it is still necessary in order to obtain the patient's confidence, and to indicate interest in his condition. Reassurance follows. Julius Bauer,[2] dealing with the principles of psychotherapy in general practice, observes that the success of reassurance depends on the doctor's authority and that the doctor's authority is not always the greater. He warns that "don't worry" and "take it easy" are inadequate. A full explanation or perhaps rationalization of the patient's symptoms must therefore form the second and most vital step. The

[1] *Lancet*, August 29, 1953.
[2] *Ann. Int. Med.*, July, 1953.

patient must be made to understand how his problems have produced his symptoms. The third step is to modify the precipitating factors or the patient's attitude towards them. In this connexion Tredgold emphasizes the importance of adequate sedation, particularly in ensuring satisfactory sleep. As the final step in the management of these patients, the cooperation of relatives may be enlisted; they may also require advice on their attitude towards the patient and his illness.

Bauer's article, to which brief reference has been made above, relates more to the principles of psychotherapy than to its practice. Nevertheless, there is much which is relevant to the present theme. He stresses the fact that the diagnosis of functional disorder should be based, not on the exclusion of organic disease, but on the presence of positive findings of neurosis or psychoneurosis, such as a "nervous, emotional personality facing a conflicting situation with which he cannot cope". In his view, conflict plays a relatively minor part in the ætiology of psychoneuroses, which he regards as related primarily to the constitutional or hereditary "set-up" of the individual. Such a concept, while it may be true, is not conducive to a constructive approach, although it offers an unassailable reason for the failure of treatment. Certainly it is a concept which is less frequently applied to organic disease nowadays than it was a generation ago. Fortunately, however, the removal of the conflict is usually sufficient to remove the symptoms at least temporarily. The general physician need not feel impotent, even if he is not familiar with the forty methods of psychotherapy which Bauer quotes one authority as describing.

HIRSCHSPRUNG'S DISEASE.

In 1948 Orvar Swenson[1,2] described a new treatment that seemed to alter completely the outlook of children suffering from congenital megacolon. Now he has presented a follow-up report on 108 patients that justifies his original claim.[3]

Since Hirschsprung described the condition in 1886 there has been speculation as to its cause with variety in its treatment. Many thought there must be obstruction in the lower large bowel, with colonic dilatation as a result. But the nature of this obstruction remained obscure. Excision of the dilated colon or conservative treatment with repeated bowel lavages was recommended. Then it was found that there was a deficiency of ganglion nerve cells in a segment of the lower large bowel and incoordinate movement of this segment was blamed for the obstruction. The treatment suggested, and performed with indifferent results, was lumbar sympathectomy.

Swenson has demonstrated that there is a narrowed segment somewhere in the region of the pelvic colon, that the bowel here is deficient in ganglion cells, that this defect is congenital and the dilatation of the colon secondary to it, that by proper radiographic technique this narrowed segment can be demonstrated, and that resection of this narrowed segment is a safe and effective cure of the disease.

Very sensibly Swenson points out that constipation in childhood should be divided into that caused by faulty habits requiring medical treatment, and that caused by congenital megacolon requiring surgical treatment. In the former there is usually a history of normal bowel action for some months after birth, the parents are often too interested and anxious about bowel function, nutrition is usually good and abdominal distension not marked, and fæcal impaction if it occurs is in the rectum where it can be felt with a finger. In Hirschsprung's disease constipation is usually obvious from birth and indeed sometimes causes death in the first few weeks of life, abdominal distension becomes pronounced and nutrition impaired, fæcal impaction occurs in the descending colon and not the rectum, which is usually empty, and the narrowed segment of the lower part of the bowel can be demonstrated by barium enema. This narrowed segment is much more important than the dilated bowel above it. To show it a small amount of barium is run in with the patient lying in the oblique or lateral position, and the narrowed segment of rectum or recto-sigmoid can be filled. It is narrow and irregular in outline and often has a turbulent and purposeless peristaltic activity. Only when rectum and sigmoid have thus been visualized is enough barium run in to fill the dilated bowel above, which then bulges down and obscures the narrowed area.

Operation consists of excision of this narrowed segment by freeing it from the proximal bowel, drawing it through the anus and cutting it off about 2·5 centimetres from the anal skin. The proximal bowel is then drawn through the anus and joined to the remaining anal canal. To make certain he has removed enough bowel, Swenson has frozen sections made during operation to determine that ganglion cells are present at the proximal line of resection. Failure to remove the whole of the narrowed segment will, of course, be ineffective and is probably the reason why this operation sometimes fails in some people's hands. But Swenson now presents his follow-up report on 108 patients. There were four post-operative deaths and only one recurrence. In that patient the narrowed segment extended to the splenic flexure and only half of it was removed. The remaining patients have one or two bowel actions daily without laxatives or enemata. Abdominal distension disappears within a year of operation, and barium enema examination shows that the bowel returns essentially to normal. There seems no doubt that Swenson has provided ample proof that his procedure is a satisfactory one.

[1] *Surgery* (1948), 24: 212.
[2] *Pediatrics* (1949), 4: 201.
[3] *Pediatrics* (1953), 12: 1.

TROPICAL SPRUE, IDIOPATHIC STEATORRHŒA AND CŒLIAC DISEASE.

Opinions fluctuate on the relationship between tropical sprue, idiopathic steatorrhœa (the so-called non-tropical sprue) and cœliac disease of children. Not long ago, the cumulative evidence suggested the practical identity of the three conditions, and in a comment in these columns on January 2, 1943, it was accepted that they were identical. The comment continued: "The syndrome of steatorrhœa, macrocytic anæmia, hypocalcæmia, emaciation and intestinal flatus, then, may appear in any country; it is known as 'sprue' only when it appears in a tropical setting." Now the position appears to be again in the melting pot, particularly as a result of the work on gastro-intestinal function and fat absorption carried out at Birmingham by Professor A. C. Frazer and his colleagues. The notable findings on the role of wheat gluten in the ætiology of cœliac disease, reported last year by Anderson, Frazer, French, Gerrard, Sammons and Smellie and referred to in these columns on June 21, 1952, have greatly advanced the effective management of this disease, and to some extent set it apart ætiologically in the group, despite its many striking similarities with the adult syndrome, idiopathic steatorrhœa. There has always been some reluctance, especially among those whose primary interest is tropical disease, to submerge the identity of the condition called tropical sprue, and this position seems to be as firmly maintained as ever. Whether or not the separation within the group will persist remains to be seen. Many points of basic similarity, as well as notable dissimilarities, are clearly set out in the paper by Professor Frazer read before the Royal Society of Tropical Medicine and Hygiene in October of last year.[1] In this paper are reported the results of studies in gastro-intestinal function, which indicate that there is a common generalized depression of the small intestine in the three conditions; this Frazer describes as the "basic pathological fault". He considers that delayed and depressed absorption may cause a caloric deficit, increased growth of intestinal bacteria and modification of intestinal contents, and that these

[1] *Tr. Roy. Soc. Trop. Med. & Hyg.*, November, 1942.

changes may be responsible for the main features of the syndromes observed. A review of the relationship of possible primary ætiological factors to this basic intestinal fault produced the following conclusions: adrenal insufficiency, climatic factors and vitamin deficiency do not seem to be primary factors; infection and hereditary factors may have a causative role in any of the three conditions; rancid fats may be important in tropical sprue; wheat gluten in the diet is a factor of major importance in cœliac disease.

These are the facts, or at any rate, the reasonable conclusions to be drawn from the facts that we have. As patient investigation brings to light more reliable data we may well hope to see an ordered pattern form. Until the detailed significance of the similarities and dissimilarities of the three clinical states can be assessed, we may care to accept Sir Philip Manson-Bahr's view[1] and "look on them as diseases which are outwardly similar but inwardly dissimilar". We shall then be free to follow Manson-Bahr in his search for an understanding of tropical sprue as an entity. Manson-Bahr has been attracted to the idea that tropical sprue is due to a specific infection ever since he engaged in research on sprue in Ceylon some forty years ago. Other authorities have seen fit to reject the specific infectious theory entirely (R. B. Strong, in a well-known text-book,[2] describes the theory as "no longer tenable"), but Manson-Bahr considers that, in the light of recent developments, his findings of forty years ago now appear to be receiving confirmation. He enumerates the main features of tropical sprue, and by linking them together seeks to detect a common basis. Certain outstanding points, which to him suggest infection, perhaps by a virus, may be briefly mentioned: sprue has a distinct and peculiar geographical distribution, being entirely absent from some tropical countries (notably Central and South America); it has an incubation period; it may occur in several individuals closely associated or even in small epidemics. Many other features fit in with the hypothesis of infection with a virus. Manson-Bahr suggests that such a virus exists in the tongue and mouth lesions which are present at some time or another in the initial stages of most cases of the disease, and that the infection spreads from there to the intestinal tract, affecting especially the ileum. The subsequent phenomena of tropical sprue can be explained by changes in the intestinal flora and interference with the absorption of vitamins leading to the typical megaloblastic anæmia. In this regard Manson-Bahr draws some interesting inferences from the observed effects of the action of antibiotics on the intestinal flora and the resemblance of the effects to certain major features of tropical sprue. He asserts that the existence of a virus attacking the alimentary tract is the only hypothesis which will explain all the apparently contradictory characteristics of tropical sprue and the extraordinary periods of latency which it sometimes exhibits. The picture that he builds up on circumstantial evidence is quite a striking one and warrants careful examination. Nevertheless, more direct evidence will be needed to raise the status of his views above that of hypothesis.

THE THYMUS GLAND AND MYASTHENIA GRAVIS.

A CONSIDERABLE body of clinical experience supports the value of thymectomy as a therapeutic measure in certain cases of *myasthenia gravis*, though adequate control observations are lacking in many series reported. The most convincing results have been associated with the presence of thymoma. C. T. Randt[3] states that because of the potentially malignant character of these tumours and the poor prognosis for patients with *myasthenia gravis*, if they are left *in situ*, thymectomy is recommended in all cases in which such a lesion can be demonstrated, provided that the patient's condition does not make the operative risk prohibitive and there is no X-ray or clinical evidence of inoperability, such as distant implants or invasion of the superior *vena cava* with obstructive phenomena. He considers that after a diagnosis of *myasthenia gravis* has been established, postero-anterior and lateral X-ray views of the chest should be taken to reveal the absence or presence of a thymic tumour. With a satisfactory technique, it should be demonstrable radiologically in almost every case. Randt goes on to point out that the effect of elective thymectomy in the absence of tumour has been variously reported, but he quotes the conclusions of L. M. Eaton and O. Clagett,[1] who compared the results of surgical treatment in 62 cases of *myasthenia gravis* without tumour with those in 56 comparable control cases, and found no statistically significant difference between the two groups. From this, thymectomy in the absence of tumour is classed as "probably not satisfactory treatment", although it is conceded that further carefully controlled studies may lead to modification of this view.

An important paper on this subject, of which Randt was apparently not aware, although it appeared nearly twelve months before the publication of his own paper, is by R. T. Ross.[2] In this, Ross reports the effect of thymectomy on 100 patients with *myasthenia gravis* who had simple hyperplasia of the thymus, and compares the results of surgery with those of medical treatment. The patients were all treated at the National Hospital, Queen's Square, London, and New End Hospital, Hampstead, and all the surgery was performed by G. L. Keynes by the same technique; this he has referred to elsewhere.[3] Ross states that of the 100 patients with *myasthenia gravis* who had benign thymomata removed surgically, 87 experienced benefit ranging from complete relief of symptoms to improvement as judged by the reduction in daily neostigmine requirements after operation. The average period of follow-up was four and a half years after operation. The benefit from surgery was greatest in patients who had had myasthenia for the shortest time before operation. Comparison of the patients treated surgically with those treated by medical means alone reveals that among the latter the proportion of cured or greatly improved patients is smaller, and the proportion of deaths due to *myasthenia gravis* is much higher than in the subjects of surgery.

An interesting recent development in this field, which opens up quite new territory, is an investigation by A. Wilson, A. R. Obrist and H. Wilson[4] of some effects of extracts of thymus glands removed from patients with *myasthenia gravis*. The extracts used were prepared from 42 thymus glands removed at operation by G. L. Keynes. The activity of the extracts was assayed on the isolated rat phrenic nerve/diaphragm preparation with *d*-tubocurarine chloride as a standard. The most important finding was that the glands which on removal produced the most beneficial therapeutic effect also produced the greatest depression in the response of the nerve-muscle preparation. Extracts of glands which were removed with little benefit to the patient were much less active in their effect on the nerve-muscle preparation. Wilson, Obrist and Wilson make the comment that if it is assumed that the relation between the activity of the gland and its removal is relevant to the causation of *myasthenia gravis*, it is pertinent to know whether this activity is characteristic of the thymus glands of persons other than myasthenic patients. This question was investigated with extracts prepared from thymus glands obtained at operation from two patients with thyrotoxicosis, and necropsy specimens of thymus glands removed from adults and children. The glands obtained from adults showed little or no activity, whereas those of children showed activity resembling that seen in a group of myasthenic glands which had high activity. The nature of the material responsible for this activity has not been determined, nor has its relationship to the function of the thymus gland. Wilson, Obrist and Wilson state that if the thymus stores

[1] *Lancet*, August 22, 1953.
[2] "Stitt's Diagnosis, Treatment and Prevention of Tropical Diseases", Seventh Edition, 1944, page 1024.
[3] *Med. Clin. N. America*, March, 1953.

[1] *J.A.M.A.*, April 1, 1950.
[2] *Lancet*, April 19, 1952.
[3] *Brit. M. J.*, September 17, 1949.
[4] *Lancet*, August 22, 1953.

this active material, it is clear that the clinical state of the patient is not directly influenced by removal of this store, for the most active gland showed a total activity that would, in practice, be very small; and the amount of active substance that can be extracted from the myasthenic glands does not appear to bear any direct relationship to the severity of the myasthenia, so far as this can be judged by the neostigmine requirements of the patients. On the other hand, there is good reason to believe that if the thymus gland releases an active substance, the amount of it which is stored in the gland may not necessarily be of the same order as the amount which is released daily. Nevertheless, if the thymus gland is an active secreting organ, it is difficult to understand why its removal from myasthenic patients produces a beneficial effect in only two-thirds of those who undergo operation. The reason for this may be that the thymus gland is not wholly responsible for the production of this substance. There is some evidence, for example, that a similar type of activity in myasthenic patients is produced as the result of muscular exercise. Much more needs to be found out about the whole subject. The findings of Wilson, Obrist and Wilson are a stimulus to further work rather than an answer to the existing questions. As they point out, the fact that removal of the most active glands leads to the greatest benefit in cases of *myasthenia gravis* is, of itself, no conclusive proof that the activity of the thymus gland is really the causal factor in this disease, though it strengthens the evidence for this view.

"CHEMOTHERAPY" AND "ANTIBIOTIC".

A SOMEWHAT confused position in present-day terminology has been recently brought to light in the correspondence columns of *The Lancet*. On July 25, 1953, a letter was published from K. H. Nickol, in which he said that the current usage of the terms "chemotherapeutic" and "antibiotic" seemed "peculiarly inept". He considered that the term "chemotherapeutic" should logically apply to all drugs of known and fixed composition and that there was no warranty for limiting the term "antibiotic" to substances derived from microorganisms. He suggested that the present use of the term "chemotherapy" was too restricted for accuracy and that the term "antibiotic" might appropriately be applied to any drug which had an inimical effect on microorganisms. This letter quickly brought from across the Atlantic a slightly, and not unreasonably, terse reply from Selman A. Waksman, discoverer of streptomycin and a leader in the antibiotic world.[1] He stated that the whole question was really quite simple. Proper definitions were available without sacrifice of historical perspective, scientific accuracy or current usage, and the matter should not be left to the whim of individuals who decided "to re-define important terms according to their own points of view". He went on to say that the term "chemotherapy" meant exactly what it said—the use of chemical agents in the treatment of infectious diseases. The agents might be produced synthetically in the laboratory ("Salvarsan" and the "sulpha" drugs), by plants in the field (quinine and essential oils), by animals (lysozyme) or by microbes (antibiotics). He went on to state that since 1942 the term "antibiotic" had been defined as "a chemical substance produced by microorganisms which has the capacity, in dilute solution, to inhibit the growth of, or even destroy other microorganisms". Whether the term "antibiotic therapy" was to be preferred to "chemotherapy" when an antibiotic was used was, in Waksman's opinion, a matter for the individual worker to decide; personally, he preferred the term "chemotherapy". What he omitted to say in his letter was that both the word and the definition were his own. A subsequent correspondent, G. S. Erwin,[2] made this last point clear, but contended that the definition had surely become obsolete when chloramphenicol was synthesized, and suggested that "chemotherapeutic agent" and "antibiotic" now meant the same thing. At the same time he joined issue with Waksman's definition of "chemotherapy" and said that it merely covered treatment by chemical agents, and therefore could equally be applied to the exhibition of aspirin for pain.

This would seem to leave the position, for practical purposes, in as great confusion as ever. But Waksman's views are those generally followed and perhaps most likely to prevail. The word "antibiotic" was coined by Waksman; and it is only fitting that his definition should be accepted, unless very strong grounds can be advanced for rejecting it. The synthesis of chloramphenicol, which was originally isolated from cultures of a *Streptomyces* species, seems a very slight basis for making the change. So far as the term "chemotherapy" is concerned, it seems a little late to start an argument. Its present-day usage, generally accepted in medical dictionaries, text-books of pharmacology and the like, is that given to it half a century ago by Paul Ehrlich and expressed quite simply in Waksman's letter. It does not seem that Ehrlich actually coined the word; indeed, G. M. Findlay[1] has been able to find it, or its reasonable Latin equivalent, in a publication by J. P. Diersch written in 1785 and entitled "*Animadversiones chemicotherapeuticæ de ferro*". Nevertheless, Ehrlich has a peculiar claim to the word; he brought it into prominence and used it frequently, and the way in which he shaped it cannot easily be disregarded. The development of chemotherapy during the present century is described in "Clark's Applied Pharmacology" as the most important therapeutic advance in the history of medicine. This development stems from Ehrlich, according to whose definition the term is used in this statement. Findlay has described as "a legitimate extension" the application of the term chemotherapy to the drug treatment of malignant growths, "even though extrinsic parasites such as viruses are not necessarily the causal agents of all tumours". This may be reasonable, but any attempt to give the word a wider usage and to apply it to all forms of therapy by means of chemical substances would only lead to fresh confusion. Incidentally, if we are to insist on defining the word according to its roots—seldom a very productive occupation with English words—we shall find, as H. St. H. Vertue[2] has pointed out, that it is more likely to mean "healing by cockles"—whatever that is. If chemical healing is meant, Vertue comments, "then chemio-therapy is the correct form and the solecism chemo-therapy should be abolished forthwith". It is interesting to note that the term chemiotherapy has a certain following (for example, it is used in the fourteenth edition of the *Encyclopædia Britannica*); but "chemotherapy" is now common usage, and both the word and Ehrlich's definition might well be left alone.

[1] *Lancet*, August 22, 1953.
[2] *Ibidem*, August 29, 1953.

DISSECTING AORTIC ANEURYSMS IN YOUNGER PERSONS.

A GROUP of 32 cases of dissecting aortic aneurysms in persons less than forty years of age has been reviewed by Ira Gore.[3] Symptomatically the process was indistinguishable from that in an older age group, but histologically there was a distinct predominance of the type of medial degeneration affecting the elastic laminæ. An unusually large number of congenital abnormalities were associated with the vascular lesions. In two cases radiological evidence of the development of an aneurysm over a period of months was reported, and the same sequence could be inferred in five other cases. Gore considers that, in view of these observations, it seems unreasonable to assume that a morphological defect was present at birth. It is more likely that the congenital lesion was a metabolic one which required time and unknown factors for its exploitation and the development of secondary morphological manifestations.

[1] "Recent Advances in Chemotherapy", Third Edition, 1950, Volume I, page 1.
[2] *Guy's Hosp. Rep.*, Volume 96, Nos. 3 and 4, 1947.
[3] *Arch. Path.*, January, 1953.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

The Action of Drugs on Intracellular Tubercle Bacilli.

G. B. MACKANESS (*J. Path. & Bact.*, July, 1952) studied the action of drugs on intracellular tubercle bacilli by means of a suspension of macrophages infected with a three-weeks-old culture of tubercle bacilli in a special culture chamber in a sealed "Perspex" slide which communicated with the exterior through two lateral drill holes. The macrophages were obtained from the adult rabbit peritoneum after the instillation of paraffin; the tubercle bacilli were a virulent bovine strain grown in Dubos liquid medium, and the mixture of cells and bacilli was made in fresh rabbit serum. The mixture was placed in the cell by means of a fine pipette; the "Perspex" slide was incubated, and microscopic examinations were made daily. Drugs in either soluble or particulate form could be added to the mixture and the effects studied. Untreated mixtures rapidly showed lysis of the macrophage cells. Streptomycin added to the cultures kept the cells unchanged, while particulate micrococcin permitted the multiplication of the bacilli, but the cells survived a little longer than the untreated controls. Quantitative estimations with streptomycin showed that its lowest inhibitory level in this experiment was 10 microgrammes per ml. Many bacilli disappeared from the streptomycin-treated mixtures. When a human strain of bacilli was used, 25 to 50 microgrammes were needed, and even at this level some intracellular bacilli will survive and multiply. Some of the newer antibiotics were also studied for their tuberculostatic activity by this technique.

Enteric Pathogens in Meat in Cairo.

T. M. FLOYD, J. R. BARANSKI AND MOHAMMED EL-GANNANI (*J. Infect. Dis.*, May-June, 1953) record the recovery of human enteric pathogens on meat from butchers' shops in Cairo, Egypt. They examined 250 samples of meat from 53 butchers' shops, and examined an emulsion prepared from a 15 gramme sample from each portion of meat. Enteric pathogens were recovered from 21, 17 being of human origin, two strains of *Salmonella typhi*, one strain of *S. paratyphi* and 14 strains of Shigella commonly found as agents of bacillary dysentery in Egypt.

The Half-Life of Gamma Globulin (Antibody).

F. J. DIXON, D. W. TALMAGE, P. H. MAURER AND MARIA DEICHMILLER (*J. Exper. Med.*, October, 1952) have studied the half-life of γ globulin (antibody) in several species labelled with I^{131} in a carbonate buffer. They used as subjects children, adults, bovines, canines, rabbits, monkeys and guinea-pigs. No more than five milligrammes of protein per kilogram of body weight was used; it was given intravenously. The subjects were bled at intervals, and the amount of I^{131} in the plasma was determined for each individual with the Geiger counter. Humans and bovines were tested weekly, the others biweekly. A batch of mice were treated specially. The findings led to the hypothesis that the life of γ globulin is in part a function of the metabolic rate of the host, and even amongst age groups within a species. The findings for the various species were as follows: bovines twenty-one days, human children twenty days, adults thirteen days, dogs eight days, monkeys six and a half days, rabbits four to five days, guinea-pigs five days, mice two days. The rabbit figures agree with published figures for immunologically determined antibody as recorded by other workers.

Staphylococcal Bovine Mastitis.

L. W. SLANETZ AND CLARA H. BARTLEY (*J. Infect. Dis.*, March-April, 1953) have investigated the diagnosis of staphylococcal mastitis with special reference to the characteristics of mastitis staphylococci. A herd of 100 cows known to be free of streptococcal infection were tested monthly, and smears and cultures on sheep or cow blood agar were made from each quarter of the udder. It was noted that in specimens of milk with a high leucocyte count organisms were frequently found; but if the organisms were scanty and the leucocyte count was low, incubation of the sample of milk before plating increased the number of cultures of staphylococci. Control tests for possible air contamination of milk samples suggested that this was not a source of false positive results. Coagulase tests and toxin production tests were performed, the latter by lysis of rabbit and sheep cells, β toxin being tested for by the lysis of sheep cells in the cold. Altogether 695 isolations of staphylococci were tested; all except six produced α and β toxins, and some tests were carried out on horse cells for γ toxin. No toxins could be demonstrated in coagulase-negative strains. Pigment production was of no help in classifying the strains for pathogenicity. Attempts were made to infect young lactating cows with various toxin-producing strains of staphylococci; the results were extremely irregular, but it did appear that strains producing α and γ toxins were more irritating to the mammary tissue than strains producing β toxin. Approximately 20% of the herd became infected with the mastitis-producing staphylococci during the five years of the experiment.

Transformation of Meningococci.

HATTIE E. ALEXANDER AND WINIFRED REDMAN (*J. Exper. Med.*, June, 1953) have studied the transformation of type specificity of meningococci. They used R strains which had been selected and trained to grow in a medium without blood, and S strains isolated from patients; their antisera were type specific produced in rabbits for smooth strains, and a polyvalent R serum was also used. The transforming agent was isolated from the smooth strains according to the technique of Avery Macleod and McCarty, modified slightly in order to lyse the meningococci. The environment used to achieve the transformation was Levinthal broth enriched with homologous antibody and 1:20 concentration of the transforming principle diluted 1:10. The change of the rough dull colony to an iridescent one, and the occurrence of capsular swelling in the transformed organisms in presence of antibody to the smooth strain from which the transforming principle was obtained, were accepted as showing that the change from R to S had occurred. By this means type I specificity was induced in R type II cells, and type IIa also in R type II cells. As in similar experiments with *Hæmophilus influenzæ* the reaction between the susceptible cells and the transforming substance takes place in a space of time less than fifteen minutes, and only a very small proportion of the bacteria show identifiable change. The desoxyribonucleic acid is an essential part of the transforming substance.

Immunization with Combined Prophylactics.

MOLLIE BARR AND MONA LLEWELLYN-JONES (*Brit. J. Exper. Path.*, February, 1953) have studied some factors influencing the response of animals to immunization with combined prophylactics. They analysed many published results of immunization of both animals and humans with more than one antigen, whether given simultaneously, closely succeeding one another or widely separated, and found much room for criticism of some of the claims made from them. They used purified diphtheria toxoid of a single strength, and combined with it three different strengths of purified tetanus toxoid, adsorbed on a mineral carrier. They tested groups of normal guinea-pigs, and others which had had the second of two injections of diphtheria prophylactic six months previously. In the normal guinea-pigs the titres of tetanus antitoxin and of diphtheria antitoxin were roughly comparable and of a fairly high order. In the diphtheria-immune animals the tetanus antitoxin titres varied, being greater in the ones given the stronger amount of tetanus toxoid. In animals which were previously given two doses of mixed typhoid-paratyphoid vaccine, the response to tetanus toxoid was of a lower order than in the control animals. The experiments showed that the effect of immunization with a combined reagent varied with dosage and proportion of the two components, and with the previous immune state of the subjects. There was also some variation from batch to batch of the reagents used in these experiments.

Enzymatic Lysis of Group A Streptococci.

MACLYN MCCARTY (*J. Exper. Med.*, December, 1952) has studied the lysis of group A hæmolytic streptococci by extracellular enzymes of *Streptomyces albus*. Organisms were grown in Todd-Hewitt broth, washed twice in saline and killed by heat at 60° C. for thirty minutes. The lytic enzymes were prepared from cultures in which sporulation of *Streptomyces albus* was present, and various media were tried; fluid medium containing salts, glucose and amino acids proved to be most satisfactory. The parent strain of culture varied in its ability to produce enzymes, and concentration methods were developed. It was found that a high proteolytic activity did not necessarily indicate a power to dissolve streptococci, but the proteolytic

enzymes did play a part in completing the clearing of streptococcal suspensions. The treating of streptococci with the non-proteolytic enzyme resulted in a change to Gram-negative staining and irregularity of outline. The author continued this work by attempting to study the nature of the cellular substrate attacked by the lytic enzymes. Mechanically disrupted streptococcal cell walls, obtained by grinding in a ball mill, were compared with the enzymatic lysates. The group-specific carbohydrate is present in the cell wall, and this seems to be attacked by the lytic enzyme in that a considerable fall takes place after treatment of the cell wall material with the enzyme.

Hæmolytic Activity of Bacterium Coli.

J. BAMFORTH AND J. A. DUDGEON (*J. Path. & Bact.*, October, 1952) have studied the hæmolytic activity of *Bacterium coli*. They found that organisms which produced a small and irregular greenish change on agar plates enriched with 5% of oxalated human blood would usually lyse human red cells added to cultures of the organism in a liquid medium consisting of 1% peptone in either 0·5% sodium chloride or 0·85% sodium chloride solution made from tap water. If doubly distilled water was used, no hæmolysis occurred. If minute traces of calcium were added, hæmolytic activity appeared. The rate of occurrence of hæmolysis was found to parallel the rate of growth of the culture, and it was also related to the optimum growth temperature. If the culture without added blood was centrifuged and the supernatant added to red cells, no hæmolysis occurred. It appeared clear that the lysis of the red cell depended on the presence of the organism itself, and that there was no evidence to suggest the formation of a filterable or soluble hæmolysin by the strains of *Bact. coli* used in this work.

HYGIENE.

Nitrates and the Presumptive Test for Bacteria in Water.

H. S. TUBIASH (*Am. J. Pub. Health.*, September, 1952) has investigated the effect of nitrates on the fermentation of lactose by organisms of the *Escherichia-Aerobacter* group, this test being the basis of the presumptive test for the most probable number of organisms of this group in water supplies. The investigation followed the discovery that nitrates in rural well waters caused methæmoglobinæmia in certain formula-fed infants. It was found that pronounced ambiguous reductions in MPN (most probable number) were obtained with waters heavily polluted with *E. coli*, *A. cloacæ* and *A. aerogenes*, at levels of 100 parts per million of nitrate nitrogen and over. Equivocally negative MPN values were obtained with the lightly polluted waters at levels of 100 parts per million of nitrate nitrogen and over. Although abundant growths were obtained in both heavily and lightly polluted waters at all nitrate nitrogen levels, gas formation by the normally lactose-fermenting coliform group of bacteria was in many cases completely inhibited. Bacteriologically non-potable nitrate-bearing waters may erroneously appear to be potable when subjected to the "Standard Methods" presumptive test because of the inhibitory effect of the nitrates on the production of visible gas by members of the *Escherichia-Aerobacter* group.

Occupational Deafness.

C. JOHNSTON (*Brit. J. Indust. Med.*, January, 1953) investigated the incidence of deafness in employees engaged in noisy occupations. Out of a total of 219 examined 28 were found to be suffering from bilateral ear disease or deafness not due to noise. Of the remaining 191, all except one man were found to have hearing losses due to noise which could be demonstrated by either speech or pure tone audiometric tests. The tests were carried out at the factories during working hours. After twenty or more years' exposure to the noise of their work, nine out of 12 chippers and riveters, seven out of 11 stampers (drop forgers), six out of 12 boiler plate fitters, and four out of 14 heading machine operators who were examined were unable to hear speech at more than three feet distance in either ear. Investigations suggest that only when the overall noise level exceeds 105 to 108 phons is serious damage likely to be caused to the hearing of an appreciable proportion of the workmen. Noise less intense than 105 phons will probably cause damage to the hearing of only a small group of individuals most susceptible to injury. Observations are also made on the recovery of hearing after a period of rest from work, the phenomenon of adaptation of hearing for speech in ambient noise, and other subjective effects of noise. Of those examined 45% stated that their hearing improved after they left their work. Investigations indicated that temporary deafness due to fatigue was lost within a few minutes, but little further restoration of hearing could be expected if the worker left a noisy occupation. The author also discusses various methods to prevent occupational deafness.

Leptospirosis.

R. H. YAGER AND W. S. GOCHENOUR (*Am. J. Pub. Health*, April, 1953) discuss the epidemiology of leptospirosis in America, where they consider that leptospiral infections constitute serious public health and livestock sanitary problems. The recognition of leptospirosis in man due to *Leptospira canicola* and *L. pomona* and the presence of these leptospiræ in dogs, cattle, horses and pigs established the potential hazard of human infection from domestic animals. Later a number of explosive outbreaks of leptospirosis among humans and dairy and beef cattle drew attention to the epidemic potential of these infections. The authors recommend further control of leptospirosis. Improved facilities for serological diagnosis of leptospirosis and the isolation of leptospira should be available. Reference laboratories for the identification of any leptospira isolated in diagnostic laboratories should be set up. All types of leptospirosis in man and animals should be reported to the authorities concerned to form reliable incidence, morbidity and distribution statistics. Further research is necessary to determine the animal reservoirs of infection, methods of transmission to man, response to antibiotics and other aspects of the epidemiology, epizootology, prophylaxis and control of these infections.

Enteric Diseases in Korea.

L. ZIMMERMAN (*Am. J. Pub. Health*, March, 1953) collected information concerning widespread enteric infections in Korea during 1951 among prisoners with diarrhœa and febrile illnesses. Of 1106 enteric pathogens recovered two-thirds were of the Shigella group, and the others were of the Salmonella group. Of the 749 in the Shigella group 729 were *S. flexneri*, and 13 were *S. dysenteriæ*. Of the 357 in the Salmonella group 182 were *S. paratyphi*, 43 were *S. choleræsuis*, 41 were *S. typhi*, 39 were *S. enteritidis*, and the remainder were of eight different strains. The Salmonella infections produced a variety of clinical manifestations and more dramatic complications. One of the latter was the occurrence in epidemic proportions of perforation at the site of ulceration of the small bowel. Much less common in the author's experience, but of particular epidemiologic significance, was the death of two patients who, though treated successfully for relapsing fever with "Mapharsen", succumbed to concurrent *S. enteritidis* septicæmia.

A New Medium for the Detection of Enterococci in Water.

W. LITSKY, W. MALLMANN AND C. FIFIELD (*Am. J. Pub. Health*, July, 1953) discuss the search for more efficient indicators of fæcal pollution than coliform organisms. They state that the coliform organisms do not always represent pollution, as they are found occasionally in uncontaminated soil and water. They may also persist for long periods and not indicate recent pollution. Further, fæcal strains cannot be distinguished from non-fæcal strains. Streptococci have been used as more reliable indicators of pollution. The authors discuss various methods and selective media in use to isolate streptococci and enterococci. They describe the use of a selective medium containing ethyl violet and sodium azide that is specific for the growth of enterococci from pure cultures or from glucose azide broth showing growth from sewage-contaminated water. They suggest that the glucose azide broth be used as a presumptive medium and ethyl violet azide broth as a confirmatory medium in a new test for enterococci.

Salmonellæ in South Australian Eggs and Egg Pulp.

P. S. WATTS AND S. MANDER (*Month. Bull. Min. Health*, June, 1953) have examined eggs and egg products from South Australia for the presence of organisms of the Salmonella genus. The methods are described. A total of 3312 eggs (shells as well as contents), 260 samples of egg pulp and 50 samples of egg powder were examined by methods capable of detecting the presence of one organism per 20 mils. In all, 146 cultures from the eggs, six from the pulp and two from the powder were suspected to be of members of the Salmonella genus. Two of these on further investigations were found to be cultures of *S. pullorum*. The others were members of the paracolon group.

Special Articles for the Clinician.

(CONTRIBUTED BY REQUEST.)

LXXXV.

CORNEAL ULCER.

Once more unto the breach, dear friends, once more. . . .
—HENRY V.

AN ulcer is an open sore, in any part of the body. It must be cleansed, rested and protected if it is to heal. If it is not cleansed, the invading armies of bacteria and viruses will swarm within it; if it is not protected, it will be worsened by the blows of trauma and be an easy prey to further infection; if it is not rested, the protective forces summoned up by the body will wear themselves out in their efforts at defence against the foes that have breached the wall. In such a crisis, one can imagine one's body crying out, in the words of Lord Macaulay:

Now who will stand
At my right hand
And keep the bridge with me?

Remember, those words were spoken by "brave Horatius", and still, as in the days of ancient Rome, the key word is bravery, the courage to do what you know you should do, in the face of overwork or weariness, of opposition by your patient (who wants to continue working), or by the insurance company (who wants him back at work as soon as possible), or by his relatives (who may think you are making a great fuss in order to prolong treatment and get more fees), or—hardest of all—in the face of the opposition of your medical colleagues (who, in all sincerity, may think that you are making much ado about nothing).

In other parts of the body, an ulcer may be serious or trivial. An ulcer of the corneal epithelium is never trivial in its potentialities; true, it may heal with the application of the simplest of remedies, or indeed, with none at all. It is also true that a pin-prick wound of the human cornea may destroy the sight, not only of the wounded eye, but of the other eye too.

There is only one way to treat an ulcer of the cornea, the way you would treat a mad dog or a mad man whom you found invading your home, and that way is with everything at your command, boots and all. Every therapeutic measure you can muster should be employed, regardless of your own or your patient's convenience. Never consider a patient's convenience; consider only his eye; that is what he has come to you for.

I still sometimes awake in the stilly hours and shiver at the recollection of a mistake I once made because I did not have the courage of my convictions. Another ophthalmic surgeon came to me with a sore eye; instillation of fluorescein revealed a small corneal ulcer. I told him. He said (it was on a Friday afternoon): "Please don't use atropine, because I have to play in a golf final tomorrow." I was weak and gave in. He developed a hypopyon ulcer, had to go to hospital for a month and called in two other oculists who gave their learned opinion, while I stood on the side-lines, feeling that I was not an eye doctor's bootlace. He nearly lost his eye and I my self-respect. From that day, nearly twenty years ago, I have never omitted to insert atropine in any case of corneal abrasion or ulceration, and during the war, when I was in charge of the eye department of Newcastle Hospital for four years, I saw in my private and hospital practice some 5000 corneal wounds, ulcers and abrasions. The danger of glaucoma? Forget it. Have a look at the optic disk and feel the tension by all means; but glaucoma is a rare disease, and the chances are 1000 to one in your and your patient's favour.

In the human eye, any break in the epithelial surface of the cornea is, whatever the academic definition may be, a corneal ulcer. In the vast majority of cases the initial cause is trauma. The gonococcus and the diphtheria bacillus can penetrate the corneal epithelium; also, neuro-paralytic conditions of various kinds can cause degeneration or exfoliation; but taken by and large, a corneal ulcer is an abrasion that has become secondarily infected.

Therefore, when you are confronted by a patient with a sore eye, I suggest that you do the following things:

1. Have a look at your patient's eye *au naturel*—without any instruments. As some immortal person has said (I learned it from that fine physician, the late Dr. Harold Ritchie): "More is missed by not looking than by not knowing." If you get the impression that there may be a corneal lesion, then go on to the second procedure.

2. Insert two drops of 4% cocaine hydrochloride solution (still the best local anæsthetic agent for instillation) and wait for two minutes.

3. Instil two drops of 2% fluorescein solution (3% sodium bicarbonate solution, 95% sterilized distilled water). Gently irrigate away the excess fluorescein by dripping a few drops from a wool swab, wet with water or saline, into the eye.

4. Examine the cornea with the best light available, and if, like me, you are falling into "the sere and yellow leaf", with the aid of a strong magnifying loupe or your reading glasses. If there is a green stain, no matter how small, anywhere upon the cornea, then proceed with cleansing.

5. Gently irrigate the eye, either with drips from a wet wool swab or by a stream of water or saline from a glass undine, everting the upper lid also, in order to wash away any pockets of infection that may be hiding and multiplying in the folds of the upper fornix. The accent, remember, is on the first word of this paragraph: "gently".

6. By way of resting the eye, insert atropine sulphate solution (1%), either three drops of an aqueous solution, or, as I prefer, an atropine ophthalmic ointment. An ointment prepared by a reputable drug house should be used. Atropine not only dilates the pupil, it also temporarily paralyses the ciliary muscle, setting the active functions of the eye at rest, just as a splint rests a broken limb. This is well known; what is not so well known is that atropine enhances the natural lysozyme action of the tears upon bacteria.

7. Protection of an ulcerated corneal epithelium falls into two categories: (*a*) mechanical measures, (*b*) medicinal measures.

(*a*) The mechanical measures are as follows. Cover and close the eye by the application of a gauze and cotton-wool or a lint and cotton-wool pad, either bandaged on, or secured by adhesive tape, or by "Sellotape" or "Durex", or some similar adhesive strip.

(*b*) The following are the medicinal measures. Prescribe antiseptic or antibiotic drops. There are as many variations of treatment as there are doctors and drugs; but as this is a practical article and not a text-book dissertation, I recommend the following prescription: crystalline penicillin, 5000 units to each cubic centimetre of physiological saline; two drops to be instilled every two hours through the day, and atropine ointment inside the lower eyelid at bedtime. Continue this until there is no longer any green stain on the cornea from fluorescein, then stop the atropine; if the eye is free from inflammation three days after this, stop the penicillin; if the eye is still free from inflammation in another three days, the battle is won.

If allowance is made for individual therapeutic variations, that is sound standard treatment that will heal the majority of corneal ulcers; but there are, as in every branch of medicine and surgery, the obdurate cases which cast us and our patients upon a sea of troubles. The ulcer will not heal, and you are confronted by an anxious patient and a troubled conscience. Many measures, both local and systemic, can be taken in such cases. However, there is now at our disposal a mighty weapon which, if rightly used, can hold our bacteriological enemies at bay.

This new strength to our therapeutic arm, this veritable Excalibur, is cortisone. Like King Arthur's shining sword, whose sheath conferred immunity from wounds upon the wearer, cortisone stands between the injury and the injured tissue, as a strong man stands between the bully and the bullied. How it acts, we do not yet know; when we do, we shall know more of the nature of life itself.

Cortisone is a two-edged sword; used in the wrong cause, it will rebound upon the user. For example, it must not be used in the treatment of dendritic corneal ulcer, *herpes corneæ*, which is a virus infection of the trigeminal nerve endings in the cornea; in this condition the drug of choice is supposed to be aureomycin. For some reason, not yet understood, cortisone appears actually to stimulate the action of viruses. Whether this is so or not (and it may be not), cortisone does not help in the treatment of virus keratitis; it would appear to me (this is personal theory) that cortisone acts as a barrier between injury to a tissue and the inflammatory reaction, initiated by the sensory nerves, of that tissue. But, if the sensory nerve itself is attacked, and inactivated, by a virus specifically attacking it, then there is no inflammatory reaction for cortisone to bar. In this

connexion, it is of interest to note that dendritic (virus) corneal ulcer does not cause much inflammatory reaction. It is hard to cure; it leaves a scar because the virus causes an epitheliolysis, a destruction of the corneal epithelium, both around and beneath the site of the initial lesion of the sensory nerve endings; but it is not excessively painful or inflammatory. Indeed, after a short initial period of pain and inflammation, the affected portion of the cornea becomes anæsthetic and the early concomitant vascular congestion largely subsides.

I have said that aureomycin is supposed to be the drug of choice in this condition; this is because aureomycin exerts a favourable influence upon certain virus lesions in other parts of the body. However, once the herpes virus has launched its attack upon the sensory nerve endings in the cornea, and implanted its branching, tree-like, root-like pattern deep into the corneal epithelium, neither aureomycin nor a hundred other golden mycins will achieve salvation. There will be a scar anyway, and in none of the modern medicines is there any hope of avoiding this. What you have to do is cure your patient's eye, so that he may go his ways again, "warts and all", as Oliver Cromwell said to the portrait painter.

The treatment is with pure carbolic acid, applied *secundem artem* with a finely pointed tooth-pick to the arboreal ramifications of the affected sensory nerve endings.

Vitamin *C* has had a vogue in the treatment of corneal ulcers, because this vitamin is present in high concentration in the lens and cornea of the human eye. It has some value in the treatment of other types of corneal ulcer; in dendritic (herpes) corneal ulcer, its use is just a waste of good orange juice, for in dendritic ulcer you are not dealing with an affection of the corneal tissues, you are dealing with a lethal lesion of the sensory nerve endings of the cornea.

If you fiddle about, like Nero, the cornea will continue to be burnt by its blazing nerve endings. Put out the fire, with carbolic acid or iodine, and cut your losses. Sir Stewart Duke-Elder prefers a 7% iodine solution; I myself have found pure phenol more efficacious and more easily controlled.

However, used in the right way and at the right time, cortisone causes a stay of execution; during this stay, the appropriate treatments of corneal ulcer can be used without let or hindrance. To change the metaphor, cortisone is an asbestos suit in which you could walk through a bush fire without being harmed; but it does not put out the fire.

The use of this substance is a matter for judgement by an ophthalmic specialist, but it is undoubtedly the most dramatic addition to ophthalmic therapy since the discovery of the uses of atropine. It has so far proved to be of more value in the self-limiting diseases of the eye than in the rheumatoid-arthritic lesions for the treatment of which it was first advocated.

As to special types of corneal ulceration, some idea of the range and complexity of the subject may be gauged by the fact that Duke-Elder, in the second volume of his monumental "Text-Book of Ophthalmology", devotes 117 pages, out of a total of 217 pages on diseases of the cornea, to these special types. It is, therefore, manifestly impossible to cover all the variations of corneal ulceration in a single article in a journal. However, there is one type of corneal ulcer of general interest, as it affords one of the rare instances of bodily infections in which pus formation does not need to be evacuated. Hypopyon ulcer, in which there is an aggregation of pus in the anterior chamber, is due to a corneal infection by bacteria of such virulence that their toxins penetrate Descemet's membrane (through which organisms cannot pass) and exert an irritative effect upon the blood-vessels of the iris and ciliary body, causing a reactive outpouring of polymorphonuclear leucocytes, which gravitate to the bottom of the anterior chamber. Provided Descemet's membrane remains intact, this pus is sterile and does not need to be evacuated. The organism usually responsible for hypopyon ulcer is the pneumococcus, though chemical poisons may sometimes cause it.

Therefore, the significance of the appearance of a corneal hypopyon ulcer is that you are dealing with an infection of such severity that in addition to local treatment, general therapy in the form of sulphonamides and antibiotics should be employed.

Conclusion.

In summary, corneal ulcers are mostly due to exogenous infection. There are also three other groups, namely, those due to endogenous infection (for example, tuberculosis, syphilis and neuro-virus infections), those due to neuroparalytic conditions, and those due to allergy, either exogenous or endogenous. The proven principles of cleansing, resting and protecting are still the basis of the edifice of treatment; but a new and brilliant star, cortisone, has flashed into the sky to guide us, provided we can take our bearings correctly.

> Then felt I like some watcher of the skies
> When a new planet swims into his ken;
> Or like stout Cortez when with eagle eyes
> He star'd at the Pacific—and all his men
> Look'd at each other with a wild surmise—
> Silent, upon a peak in Darien.—JOHN KEATS.

ARTHUR D'OMBRAIN,
Sydney.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Royal Prince Alfred Hospital, Camperdown, on May 21, 1953. The meeting took the form of a series of clinical demonstrations by members of the medical and surgical staffs of the hospital.

Successful Pregnancies After Lung Resection for Tuberculosis.

DR. MAURICE JOSEPH showed two patients who had had successful pregnancies after they had undergone lung resection for tuberculosis. The first patient was a married woman, aged thirty-one years. In 1937 the patient, then aged fifteen years, had been examined radiologically as a symptomless contact of her father, who had died that year of pulmonary tuberculosis. The X-ray appearances of her lung were normal, but she had not again come under observation until 1939, when an X-ray film was reported to show fibroid phthisis involving practically the whole of the left lung with extensive cavitation in the upper half and a small, probably healed focus in the middle third of the right lung. The patient was admitted to hospital and treated by bed rest alone, being considered unsuitable for collapse therapy. She rapidly gained weight and her clinical condition showed steady improvement. Subsequently she married and had three children, two of them dying of tuberculous meningitis, one in 1944 at the age of two years, and the other in 1949 at the age of ten months. She came under Dr. Joseph's care in October, 1950, when, despite an apparently destroyed left lung and a lesion in the upper lobe of the right lung, her clinical condition was very good. Her sputum was found to contain *Mycobacterium tuberculosis*, and bronchoscopic examination revealed stenosis of the left main bronchus. The operation of left pneumonectomy was considered, but it was thought advisable to be certain of the stability of the lesion in the right lung, and a course of PAS was given. By September, 1951, it was considered that the lesion in the right lung was quite stable, and Dr. J. McMahon performed left pneumonectomy and thorocoplasty in October, 1951, under a cover of streptomycin and PAS. The patient had an uncomplicated convalescence and felt very well throughout. Dr. Joseph said that since operation the patient had been completely free of cough and sputum. Four months after operation she became pregnant, and as her clinical condition was good it was considered advisable to allow pregnancy to continue. She had an uncomplicated pregnancy and was confined of a healthy female infant exactly one year after her pneumonectomy. The child was now seven months old and had been vaccinated with B.C.G. Both the child and the mother were well.

The other patient, a married woman, aged twenty-nine years, was a contact of her sister, who had pulmonary tuberculosis. She had had an attack of hæmoptysis in December, 1945, and X-ray examination then revealed a small right apical lesion. That appeared to be controlled by a period of bed rest, but in January, 1947, a spread occurred and right artificial pneumothorax was induced. That seemed to control the disease and continued satisfactorily until October, 1949, when the patient complained of a wheeze in the upper part of the right side of the chest. Up till that time the patient had been sputum-free, and gastric lavage had produced negative results. However, in December, 1949, scanty sputum appeared, and a rounded shadow developed at the side of the supposedly healed or healing lesion. The sputum was found to contain tubercle

bacilli, and bronchoscopy revealed redness and swelling of the right upper lobe bronchus. It was considered that endobronchial disease had caused the reopening of a cavity, which had become filled with caseous material forming, in effect, a tuberculoma. The pneumothorax was abandoned, and a course of streptomycin, half a gramme per day for thirty days, was given. At subsequent bronchoscopic examination, the right upper lobe bronchus appeared to be normal. As collapse therapy had obviously failed, a right upper lobe lobectomy was performed in March, 1950, followed by limited thorocoplasty. The removed lobe was found to contain a fairly large, solid, caseous lesion surrounded by some satellite tubercles. Dr. Joseph said that convalescence was uneventful, and the patient had remained well, with no radiographic evidence of any further lesion. She was free from cough and sputum, and a recent gastric lavage had produced negative results. In May, 1952, the patient became pregnant, and in February, 1953, she was delivered of a normal male infant. The child had had B.C.G. vaccination, and both the child and mother had remained well.

Dystrophia Myotonica.

Dr. Joseph also showed a patient, aged forty-nine years, a lawyer, who had been first examined in January, 1953, when he complained of tiredness and weakness, drooping of the eyelids and inability to flex his hands. The patient's history was that in 1945 drooping of an eyelid had been noticed by his dentist. Some time later the patient had found difficulty in relaxing his grip. Later that had changed to increasing difficulty in holding objects in his hands, and in recent months he had dragged his right foot. Drooping of the eyelids had become progressively worse, and there had been steady loss of weight from ten stone ten pounds to eight stone six pounds in two years. Investigation of the patient's previous history revealed that at the age of twenty-six years he had developed tuberculosis, and now he had a healed lesion in the upper lobe of the right lung. His father had died at the age of eighty-one years, and his mother, who was still alive, was aged eighty-one years. One brother had died of pulmonary tuberculosis two years previously, and two brothers were living, one of whom was prematurely bald and was said to resemble the patient in appearance. The patient had four sisters, one of whom, aged forty-eight years, was said to have peripheral neuritis. He had also one son, aged seventeen years, who was well. Dr. Joseph said that the significant physical signs found by examination of the patient were his general wasted appearance, bilateral ptosis with sunken eyes, wasting of the temporal muscles and complete loss of the sterno-mastoid muscles. He had also wasting of the small muscles of the hand and of the forearms. Right foot-drop was present with wasting of the right *tibialis anterior* and of the lower parts of the thigh muscles. A myotonic reaction could be elicited by tapping the thenar muscle. Examination of the lenses with a slit lamp showed a developing cataract in the right eye. The patient's condition was typical of fairly advanced *dystrophia myotonica* without baldness or testicular atrophy.

Round Lesions in the Lung.

DR. G. L. MCDONALD presented details of four cases of round pulmonary lesions.

A Pole, aged fifty-two years, had come under observation in November, 1951, because of an abnormality found in a routine chest skiagram taken for employment purposes. On being questioned, he admitted to a cough of many years' duration and some degree of breathlessness on exertion for about four years. He was a heavy smoker. Fifteen years previously he had spent three months in a Polish hospital with "chest trouble", the exact nature of which he did not know. Examination of the patient failed to reveal clubbing of the fingers or abnormal signs in the lungs. The Mantoux test result was positive, but no tubercle bacilli were found in the sputum. Chest X-ray examination revealed a rounded shadow lying a little above and lateral to the hilum of the right lung. As the nature of the lesion was not definitely known, he was admitted to hospital and subjected to exploratory thoracotomy by Dr. J. McMahon in December, 1951. Carcinoma of the lung was found, about seven centimetres in diameter, with a few soft, enlarged hilar glands. Pneumonectomy was carried out. The patient did poorly in the post-operative period and died in January, 1952, his mental state before death suggesting the presence of cerebral secondary deposits. Histological examination of the tumour showed it to be an anaplastic carcinoma with a good deal of necrosis. The hilar glands were involved.

A male process worker, aged fifty-eight years, had an attack of what was described as influenza in April, 1951, which was slow to clear up. In May, 1951, chest X-ray examination showed what was reported as a small patch of consolidation at the base of the left lung. After another influenzal attack, a further X-ray examination in October, 1951, showed a round shadow situated anteriorly at the base of the left lung. It appeared to be a cyst, and the possibility of hydatid was mentioned by the radiologist. The patient had had no contact with sheep. He was referred to the Royal Prince Alfred Hospital in March, 1952, when he had no symptoms. Physical examination revealed no abnormality. A Mantoux test yielded a positive result with 1:1000 old tuberculin. The Casoni test result, both immediate and delayed, was negative. The hæmoglobin value was 14·7 grammes *per centum*. The total white cell count was 6550 per cubic millimetre, made up of neutrophile cells 71%, lymphocytes 20%, monocytes 7% and eosinophile cells 2%. The blood sedimentation rate was five millimetres in one hour. It seemed that the lesion might be either a hydatid or a simple cyst, and the patient was submitted to operation by Dr. J. McMahon in July, 1952. It was found that the cyst was a simple one, either pleural or pericardial in origin. It was removed locally. Convalescence was smooth, and the patient had since been well.

A man, aged fifty-five years, was referred to the thoracic unit in January, 1953. Six weeks previously he had begun to experience cough with a little sputum and an intermittent substernal ache not related to exertion. He had lost ten pounds in weight and more recently had become fatigued. He had previously had pneumonia at the age of seventeen years, and bronchitis of mild degree for as long as he could remember. He smoked four ounces of tobacco a week. The results of physical examination were negative, but chest X-ray examination showed an increased left hilar shadow in the form of an indefinite rounded opacity lying just below the shadow of the pulmonary artery. The Mantoux test result was negative with a dilution of 1:1000, and positive with a dilution of 1:100. At sputum examination pus cells and cocci were seen on smear examination, but no tubercle bacilli and no carcinoma cells; a mixed growth of organisms was produced on culture. The hæmoglobin value was 15·3 grammes *per centum*. The total white cell count was 6500 per cubic millimetre with a normal differential count. The blood sedimentation rate was 10 millimetres in one hour. Bronchoscopic examination showed slight congestion of the mucosa of the left main bronchus, but no evidence of neoplasm. A probable diagnosis of bronchial carcinoma was made, and thoracotomy was advised. The patient, however, decided against operation, and his subsequent progress had been watched. Further bronchoscopic examination in March failed to reveal evidence of carcinoma. Recent X-ray films showed that the lesion was increasing.

A man, aged fifty-eight years, had reported to the anti-tuberculosis dispensary in 1943 because he had lost half a stone in weight in six months. He had no respiratory symptoms. Physical examination revealed no abnormality. X-ray examination revealed a rounded shadow to the right of the mid-line in the anterior part of the mediastinum. Hydatid cyst and pulmonary neoplasm were considered as possible causes by the radiologist. The results of blood Wassermann and Kline tests were negative, as was the result of the Casoni test. The blood count findings were normal. As a definite diagnosis could not be made, further X-ray examinations were carried out at intervals for about six months. The radiological picture remained unaltered, and the lesion was therefore felt not to be serious. The patient did not attend the dispensary from January, 1944, until April, 1953, when he decided that it would be about time to have a further radiological check. He felt quite well. X-ray examination again showed a rounded lesion situated anteriorly at the level of the first and second right costal cartilages. On the evidence of the recent films alone the radiologist suggested neoplasm as a likely diagnosis. Clinical examination showed no abnormal respiratory signs, but a hard swelling could be felt in the region of the second right costal cartilage. The tumour was therefore considered to be a chondroma of the costal cartilage and of extra-pulmonary origin.

Atrial Septal Defect.

DR. J. KEMPSON MADDOX and DR. J. HALLIDAY showed a man, aged thirty years, who had been discharged from the army as a result of mild exertional dyspnœa and fainting in 1941. He had since suffered from slowly increasing dyspnœa and was now breathless when walking up hills or stairs. He had had no hæmoptysis, cough or blueness. His pulse rate was regular, and he had normal femoral pulsation and normal jugular venous pressure. A right ventricular type of precordial pulsation was present with palpable pulmonary artery pulsation and no thrills. The second

heart sound in the mitral area was widely split, and a soft systolic murmur was audible in the parasternal line in the third left intercostal space. Fluoroscopic examination revealed increased pulmonary artery markings with intrinsic pulsation and slight right ventricular hypertrophy. The electrocardiogram showed right ventricular hypertrophy and right bundle branch block. A diagnosis was made of atrial septal defect with normal pulmonary pressure. Cardiac catheterization confirmed the findings, but in addition revealed the presence of anomalous pulmonary veins draining into the superior *vena cava*.

The next patient, a man, aged twenty-seven years, had a history of lack of energy, lowered exercise tolerance and tendency to blueness from the age of five years. At the age of sixteen years he had had his first hæmoptysis, and he had had four more since. He could climb stairs slowly and had no orthopnœa or ankle swelling. Examination of the patient revealed clubbing of the fingers, central cyanosis, a regular pulse, and a readily visible *a* wave in the jugular venous pulse. A right ventricular type of apex beat could be felt, with palpable pulmonary artery pulsation and a shock coincident with the second heart sound in the third left intercostal space, but no thrill. A soft mitral systolic murmur and a narrowly split second sound were audible in the pulmonary area, with an accentuated second element. Fluoroscopic examination showed relatively clear peripheral lung fields with gross enlargement of the main pulmonary artery and branches and intrinsic pulsation. The right ventricle was enlarged. The electrocardiogram showed incomplete right bundle branch block and an *S* wave persisting to lead V6. A diagnosis was made of atrial septal defect with pulmonary hypertension and right-to-left shunt. The defect was demonstrated by angiocardiography.

Dr. Maddox and Dr. Halliday then showed a woman, aged eighteen years, who had had a heart murmur first found at the age of six months. She led a normal life without exercise limitation. Her radial pulse and jugular venous pulse were normal, and she had no cyanosis or clubbing of the fingers. A left ventricular type of apical pulse was present, with a palpable pulmonary artery pulsation and a systolic thrill maximal in the third left intercostal space near the sternum. A loud harsh systolic murmur was maximal in the third left intercostal space, and the second heart sound in the pulmonary area was normally split with no accentuation. Fluoroscopic examination revealed moderate pulmonary artery enlargement with intrinsic pulsation. The electrocardiographic findings were normal. The diagnosis was ventricular septal defect without pulmonary hypertension.

The last patient of the group, a man, aged fifty years, had a history of palpitations and exertional dyspnœa beginning at the age of thirty-two years. He was now breathless after climbing twenty stairs and had had two attacks of hæmoptysis. The palpitations were controlled by quinidine. He had slight cyanosis and clubbing of the fingers, with occasional extrasystoles and a raised jugular venous pressure. The apex beat was of the tapping right ventricular type, and a systolic thrill was present in the second and third left intercostal spaces in the parasternal line. A third heart sound was present at the apex, and the second sound in the pulmonary area was loud and single. Fluoroscopic examination revealed gross pulmonary artery enlargement with intrinsic pulsation and right ventricular enlargement. The electrocardiogram showed first degree heart block and right bundle branch block. A diagnosis was made of ventricular septal defect, with pulmonary hypertension and right-to-left shunt. Cardiac catheterization revealed a mean pulmonary artery pressure of 84 millimetres of mercury, a high oxygen content of the right ventricular blood as compared with the right auricular sample, and a pulmonary blood flow exceeding the systemic flow.

Aplasia of the Bone Marrow and Marrow Replacement.

The Clinical Research Unit presented a demonstration comparing aplasia of the bone marrow with marrow replacement of various types. The cytology of the peripheral blood, the response of the reticulo-endothelial system and the clinical course in both groups were illustrated by six case histories.

The first history in the group illustrating bone-marrow aplasia was that of a woman, aged twenty-five years, who sewed hatbands into men's hats. No history of contact with any chemical was obtained. Her first symptom was fatigue experienced in 1949. Early in 1951 she was found to be anæmic, and the related symptoms increased during the year until bruising and menorrhagia made her seek medical advice. When admitted to hospital in January, 1952, she had a few scattered petechiæ, but no enlargement of liver, spleen or lymph glands. Blood examination revealed a severe degree of anæmia with normoblasts, leucopenia and thrombocytopenia. Bone marrow biopsy revealed marrow aplasia. She had a severe retroperitoneal hæmorrhage and was given ACTH. Temporary remission followed in respect of the neutropenia, but her hæmoglobin value steadily fell and she required blood transfusion. Since then, frequent blood transfusions had been required. Repeated vaginal hæmorrhage was eventually controlled by intrauterine radium application. At the present time the patient visited hospital for a transfusion approximately every three weeks and, despite medical advice, was to be married in three weeks' time. In general, her health had been remarkably good. The comment was made that anæmia, leucopenia and thrombocytopenia in the presence of aplastic bone marrow justified the diagnosis of aplastic anæmia. The presence of 20 normoblasts per cubic millimetre on two occasions and of 35 myelocytes per cubic millimetre on one occasion was unusual.

The next case history was that of a young man who had been employed as a cleaner and fireman by the railways, but who was exposed to no known chemicals other than kerosene and lubricating oils. In November, 1949, he had had acute gonococcal urethritis and was treated with penicillin and "Sulphatriad". In May, 1950, after an attack of "influenza" he was noted to be pale and complained of weakness, dyspnœa and headache. Subsequently he suffered from morning vomiting and loss of weight. A blood count revealed a severe degree of anæmia and neutropenia. He was referred to the Royal Prince Alfred Hospital, where he was admitted. A further blood count confirmed the severe anæmia and neutropenia and revealed thrombocytopenia. Bone marrow biopsy revealed pronounced hypoplasia. Shortly afterwards, retinal hæmorrhages appeared in his left eye. He was given two and a half litres of blood and discharged from hospital. During the next five months he had frequent blood transfusions. Recurrent infections developed in and around his mouth and throat, and petechiæ appeared in his skin and in the oral mucosa. Furuncles and infection in many old penicillin injection sites became troublesome and increasingly difficult to control till finally a high fever resistant to antibiotics ushered in stupor and death. The comment was made that the presence of anæmia, neutropenia and thrombocytopenia, together with the absence of splenomegaly, hepatomegaly and lymphadenopathy, suggested the diagnosis of aplastic anæmia. That was confirmed by bone marrow biopsy and later by autopsy. The frequent infections had been at first mild, but later had become increasingly difficult to control with antibiotics, and overwhelming general infection had caused death.

Another patient, a young woman who lived on a dairy farm near Bega, had been well until December, 1948, when she began to suffer from epistaxis and menorrhagia. Five months later she began to notice that she bruised easily, and "spontaneous" bruises appeared. Menorrhagia continued, and pallor and the presence of petechial hæmorrhages in her skin became noticeable. On her admission to the Rachel Forster Hospital, petechiæ and pallor were noted, but no other physical abnormality. Then she developed papillœdema and hæmorrhages in the fundus of both eyes. Blood count revealed anæmia, leucopenia and thrombocytopenia. Bone marrow biopsy revealed aplasia. She received blood transfusions and was later transferred to the Royal Prince Alfred Hospital. There she was noted to have bleeding from her gums, retinal and vitreous hæmorrhages in both eyes, and hæmorrhagic papillœdema. No lymphadenopathy, splenomegaly or hepatomegaly was detected. She received no benefit from toluidine blue injections or from protamine sulphate. Her red cell count and hæmoglobin value were maintained by some 17 blood transfusions. However, her leucopenia, neutropenia and thrombocytopenia increased, she had several severe uterine hæmorrhages, and finally she succumbed to gross right occipito-parietal intracerebral hæmorrhage. Autopsy confirmed the diagnosis of aplastic anæmia. The comment was made that the presence of anæmia, neutropenia and thrombocytopenia, together with the absence of splenomegaly, hepatomegaly and lymphadenopathy, suggested the diagnosis of aplastic anæmia, which was confirmed by bone marrow biopsy and autopsy. Bleeding was troublesome, but was always controlled except in the final episode of cerebral hæmorrhage which caused the patient's death.

A male transport inspector, aged fifty-eight years, had suffered from recurrent malaria when he was a young man, but not since. In 1940, at the age of forty-six years, when suffering from appendicitis, he was found to have an enlarged spleen. In 1946 he was admitted to hospital for melæna from a chronic duodenal ulcer, and an enlarged liver and spleen were observed. He had little anæmia, but

normoblasts and erythroblasts were seen in his peripheral blood together with an increased number of leucocytes, the majority of which were neutrophile granulocytes. Myelocytes were frequent, and some myeloblasts were seen. He was admitted to the Royal Prince Alfred Hospital in October, 1950, again with melæna, and was given a blood transfusion. His spleen and liver were then grossly enlarged. X-ray examination showed the presence of a duodenal ulcer, and bone marrow biopsy showed fairly active marrow with a shift to the left. In June, 1951, a blood count showed a considerable degree of anæmia with reticulocytosis. Bone marrow biopsy showed a good deal of hypoplasia with some fibrosis, and liver biopsy showed myeloid metaplasia. In March, 1953, his spleen became so large that he was considerably troubled by anorexia and inability to eat more than a few mouthfuls of food at a time. He developed distressing frequency of micturition and intermittent claudication in both calves. Deep X-ray therapy was applied with considerable decrease in the size of the spleen and relief from all symptoms as well as gain in weight. This was followed shortly after by a fall in the leucocyte count and in the hæmoglobin value. A blood transfusion was given, and the patient at the time of the meeting was well and working. The comment was made that hepatomegaly with leucoerythroblastosis suggested the diagnosis of myeloid metaplasia, which was confirmed by liver biopsy. Bone marrow examination showed myelofibrosis. The symptoms related to massive splenomegaly were relieved by X-ray therapy, but with decrease in spleen size, leucopenia and anæmia developed.

A dairy farmer, aged fifty-three years, had been well until 1939, when he first noticed fatigue and œdema of the ankles. In 1942 he was rejected from army service because of splenomegaly, and was found to have severe anæmia. Radiological changes in the skeleton were regarded by Dr. H. R. Sear as being those of osteosclerosis. He had three blood transfusions and returned to his occupation of dairy farmer. He did not work as hard as before, but was very active and had no further transfusions. In April, 1952, he complained of weakness, œdema of the ankles and syncopal attacks, and examination revealed severe anæmia and splenomegaly. He was given four blood transfusions and referred to the Clinical Research Unit. Investigations in March, 1953, revealed severe leucoerythroblastic anæmia with thrombocytopenia. Bone marrow biopsy showed myelofibrosis, and lymph gland biopsy revealed myeloid metaplasia. X-ray examination of the skeleton showed the osteosclerosis previously seen. Biopsy of the shaft of the tibia showed brittle, hæmorrhagic, thickened bone with a non-specific microscopic appearance of osteosclerosis. In summary, the history was that leucoerythroblastic anæmia in the presence of splenomegaly had suggested myeloid metaplasia, which was confirmed by lymph gland biopsy. X-ray studies and bone biopsy revealed osteosclerosis and myelofibrosis.

A married woman, aged fifty-seven years, had had a non-toxic goitre for fifteen years and "raised blood pressure" for about ten years. She had had transient hemiparesis in 1946. In September, 1952, she complained of headache and giddiness for three months. Examination of the patient revealed a blood pressure of 150 millimetres of mercury, systolic, and 80 millimetres, diastolic, but she had considerable splenomegaly and hepatomegaly. Blood examination revealed leucoerythroblastic anæmia. Bone marrow biopsy showed myelofibrosis, and liver biopsy showed myeloid metaplasia. X-ray examination of the skull and long bones showed no bony abnormality. A transfusion was given with packed red blood cells. Subsequently a hæmoglobin value of 11 to 12 grammes *per centum* was maintained with no other essential change in the peripheral blood picture. The history was summed up in the statement that the characteristic findings of myeloid metaplasia related to myelofibrosis were incidental findings in a patient with arteriosclerosis.

(To be continued.)

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held in the Anatomy Theatre, New Medical School, Frome Road, Adelaide, on June 5, 1953.

Capillary Circulation in the Rabbit Ear Chamber.

DR. M. TAYLOR read a paper on capillary circulation in the rabbit ear chamber. He said that the transparent ear-chamber technique was developed by Sandison in 1924 for the study of newly formed small blood vessels and connective tissue, and had since been widely adapted for many purposes in the study of inflammatory processes, glandular transplants and a variety of pharmacological and physiological investigations. While the ear chamber afforded probably the best optical conditions for such study, it suffered from the defects that (i) the tissues were not accessible for topical applications of substances or micromanipulation, and (ii) the construction of the chambers unavoidably imposed certain mechanical conditions on the tissues within which made any quantitative studies of vascular behaviour unreliable.

Dr. Taylor went on to say that a study had been made of the sympathetic control of true capillaries in thin-tissue chambers, and no evidence had been found that such control existed, the behaviour of those vessels being considered to be passive. "Sludged blood" had been observed in blind-ending capillaries, the erythrocytes being packed together into a homogeneous mass in which individual cells could no longer be distinguished. Such masses could be expressed backwards into flowing vessels by pressing on the cover of the chamber, when it was seen that they immediately broke up into individual cells, and showed no evidence of clumping or rouleaux formation. Intravital methylene blue staining had occasionally demonstrated nerve fibres in mature chambers, but the method was considered to be too capricious to be of great value as an adjunct to the technique. Such nerve fibres as had been seen appeared to be only casually related to the capillaries.

Capillary Resistance in Human Subjects.

PROFESSOR H. N. ROBSON described an apparatus for the measurement of fragility of capillaries in the human skin. He said that the principle consisted of applying variable suction pressure to a standard area of skin for a standard time period; thus was measured what was termed the "critical petechial pressure". With the use of this apparatus, it was found that the resistance to rupture varied widely over the body in the normal subject, being least over the sternum and between the scapulæ, and greatest at the extremities of the limbs. For clinical purposes, three standard areas were chosen on the flexor aspect of the forearm and tested in 300 healthy young adults. The "critical petechial pressure" ranged from 200 to 450 millimetres of mercury (negative pressure). The application of the method in clinical practice was then discussed briefly. Professor Robson said that as an index of a bleeding tendency, the test compared favourably with other methods of estimating capillary fragility, but there was no constant correlation with blood platelet levels or with bleeding-time estimations. It was found that a rise in capillary resistance, as measured by this method, could be produced in a variety of ways, and evidence was produced which indicated that the common factor was an activation of the pituitary-adrenal mechanism. It was suggested that adrenocortical activity played a part in the regulation of skin capillary resistance.

A meeting of the Medical Sciences Club of South Australia was held in the Anatomy Theatre, New Medical School, Frome Road, Adelaide, on July 3, 1953.

A New Approach to Conscious Perception.

DR. W. R. ADEY discussed work which he had undertaken in collaboration with Mr. D. I. B. Kerr, Mr. I. D. Carter and Mr. R. Porter, and which was concerned with the cerebral representation of certain forms of deep somatic sensibility in the marsupial phalanger and rabbit. The cerebral maps were prepared by recording the arrival of afferent volleys on the brain surface. Dr. Adey said that stimulation of deep structures, principally by electronic methods, indicated that the representation of deep sensibility was in the regions designated somatic areas I and II for tactile sensibility, and that the representation of deep sensibility had the same basic spatial arrangement of body regions on the cortical surface. However, the representation appeared to extend beyond the confines of the area containing the tactile representation.

There was strong evidence that the deep sensibility was represented bilaterally in the first somatic area in both phalanger and rabbit. The homolateral representation of each limb occupied an area concentric with, and in most cases only slightly smaller than, the contralateral representation. In both phalanger and rabbit, the afferent volleys

from homolateral and contralateral limbs showed constant patterns of temporal dispersion over the cortical surface in the first somatic area, and those were clearly different for the two limbs. The evoked potentials from the homolateral limb showed an essentially constant latency across the responsive area, whereas the latency of contralateral responses decreased rapidly from the periphery to the centre of the area.

In stimulation of the prehensile forelimb of the phalanger, the total responsive zone in the contralateral first somatic area remained constant in size and disposition from stimulation of widely separated points in the digits and distal forearm. However, the cortical point within that area yielding the most rapid responses showed constant alterations in position with changing sites of peripheral stimulation, and it was suggested that perception and localization might occur in terms of the point of shortest latency within an activated area of essentially constant site and dimensions. The possible association of the temporally undispersed volley in the homolateral first somatic area with the perception of certain forms of deep pain was discussed.

Dr. Adey said that constant patterns of latency had been noted across the cortical surface of the second somatic area in both phalanger and rabbit. No significant spatial separation of the limb representations in that area had been detected.

Intracellular Distribution in Yeast Enzymes.

DR. P. M. NOSSAL, in a communication on intracellular distribution in yeast enzymes, said that a mechanical shaker capable of 5600 revolutions per minute was used for the rapid disintegration of baker's yeast cells. The percentage disintegration for shaking periods of 10, 30 and 90 seconds was reproducible. The extracts prepared showed higher activities for various dehydrogenases than had been suspected previously. The distribution both of dehydrogenases and of fumarase and aconitase between the granular portion of the extract and the non-sedimentable supernatant varied with the disintegration period. Ten-second granules showed higher specific fumarase and aconitase activities than the whole extract or the supernatant; thirty-second granules had only one-half to one-third the specific activities for fumarase of the supernatant; ninety-second granules had less than 10% of the fumarase and aconitase activities of the supernatant. Therefore, prolonged disintegration caused detachment of those enzymes from the granules.

Similar results were obtained in a study of dehydrogenase distribution. Whereas the insoluble systems, such as succinic and α-ketoglutaric oxidases, remained usually 100% on the granular fraction, the distribution of activity of the soluble dehydrogenases (lactic, ethanol and malic) paralleled that of fumarase and aconitase.

It was suggested that ten-second granules were the nearest approach to animal mitochondria.

Dr. Nossal made brief mention of another type of cell disintegrator, by the use of which it had been possible for the first time to prepare actively respiring cell-free yeast extracts.

A meeting of the Medical Sciences Club of South Australia was held in the Anatomy Theatre, New Medical School, Frome Road, Adelaide, on August 7, 1953.

Rubber Metabolism in Plants.

DR. J. P. RICHES, in a consideration of rubber metabolism in plants, said that whereas the latex from young shoot tips of *Cryptostegia grandiflora* contained a high percentage of the rubber hydrocarbon, that from the related species *Cryptostegia madagascariensis* contained little rubber but considerable quantities of "resin". From the "resin fraction" was isolated the triterpenoid derivative lupeol. Crosses between the two *Cryptostegia* species gave plants of high rubber content in the F_1 generation; seedlings of the F_2 generation were said to show segregation between rubber and non-rubber producers in the ratio 3:1. Those findings might be taken as a clear indication that a close relation existed between triterpenoid metabolism and accumulation of the rubber hydrocarbon. The evidence that rubber of triterpene was derived from a single precursor in the presence of suitable catalysts was not, however, entirely convincing. Triterpene derivatives were found in many plant species, in the tissues of non-rubber producers as well as rubber-producing plants. They formed one of the groups of sapogenins, yielding on dehydrogenation in the presence of selenium 1,2,7-trimethyl-naphthalene.

The rate of accumulation of rubber hydrocarbon in the tissues of young seedlings of *Parthenium argentatum* and of *Hevea brasiliensis* was increased after addition of acetate or acetate derivatives (substances which might be manufactured from acetate within the cell or which might break down to give fragments similar to acetate). Within the experimental period of fifty-six hours, Bonner and his co-workers had shown that a small fraction of tracer carbon was incorporated from the fed acetate into molecules of the rubber hydrocarbon in seedlings of *Parthenium argentatum*.

Recent work had shown that the feeding of labelled acetate to various types of mammalian tissue resulted in the production of considerable quantities of cholesterol enriched with the carbon isotope, either in the side chain or in the nuclear part of the molecule.

Dr. Riches said that it might seem a far cry from cholesterol metabolism in animal tissues to triterpenoid metabolism in plants. It should, however, be pointed out that Koch had recently revived the suggestion that the cholesterol molecule might be synthesized via the triterpene squalene, that the animal was receiving considerable quantities of triterpenoid derivatives from the diet, and that plant tissues had been shown recently to contain œstrogen-like substances.

Electron Microscopy of Collagen and Reticulum.

DR. S. G. TOMLIN reported experiments in electron microscopy carried out with the object of elucidating the relation between collagen and reticulum, and described the nature of the affinities of those fibres for silver. He said that it had been shown that the reticular fibres of the spleen, carefully prepared in such a way as to leave no doubt that the fibres obtained were in fact reticulum, had the same characteristic structure as collagen. Thus the fibres of connective tissue which stained brown on impregnation with silver had the same structure, within the limits of resolution of the electron microscope, as those which stained black; and apart from their response to silver staining, they could not be distinguished. It was shown that the silver was deposited upon the surfaces of fibres and not inside them, and that therefore the interfibrillar ground substance might be involved in the response to silver impregnation. A number of experiments had been carried out to show that collagen fibres could be given the silvering properties of reticulum by embedding them in a matrix of hyaluronic acid or blood plasma. Thus rat tail tendon fibres, which stained a light brown colour on silver impregnation, were blackened if they were first embedded in hyaluronic acid. It must therefore be concluded that the silver impregnation processes did not distinguish different fibre types, but differentiated fibre-ground substance complexes. Electron microscopy showed that whereas silvered collagen fibres showed only a random deposition of silver particles on the fibres, treatment with hyaluronic acid before silvering resulted in a much more intense deposition of silver in a regular pattern, the silver appearing on the collagen A bands of Schmidt. Depending upon the amount of hyaluronic acid present, the fibres might be completely covered with silver, corresponding to the black staining of reticulum, while lighter deposition corresponded to the varying shades of brown shown by collagen.

The final conclusion was that there was no evidence to contradict the view that the fibres of reticulum and collagen were identical, and that such differences as appeared were to be attributed to differences in the media in which they lay.

Oxalis Cernua Poisoning in Sheep.

DR. P. S. WATTS, in a paper on *Oxalis cernua* poisoning in sheep, described briefly the economic importance of the plant and the losses it caused. He said that work had shown that approximately 15% of the dry matter of the plant was represented by anhydrous oxalic acid. Administration of that acid had reproduced the clinical disease, but the dose required varied with the nutritional status of the sheep immediately before the administration of the acid. A series of graphs were shown which demonstrated that the oxalic acid was the important part of the diet. The protein status had no effect, although kidney damage was an essential part of the clinical syndrome. Dr. Watts also said that in-vivo diagnosis was now possible, the criteria being proteinuria, low blood calcium content, high blood urea content and low hæmatocrit.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

GOVERNMENT AND GENERAL ORDER.[1]

[*The Historical Records of Australia*, Series I, Vol. VIII).][1]

Sydney,
September 15, 1810.

IT having been represented to His Excellency the Governor as a very serious Grievance that the stream of water which flows through the town of Sydney and the tanks which have been constructed thereon (at considerable expense) for the purpose of procuring an adequate supply of pure and good water for the necessary accommodation and benefit of the inhabitants at large, are frequently polluted and rendered totally unfit for those valuable purposes (which become the more important by the scarcity of wholesome water with which the town is supplied): and it thence becoming an object of the first consideration to the health and comfort of all persons residing within the town of Sydney that such streams and tanks should be strictly preserved and guarded against all abuses whatever His Excellency deems it necessary to issue the following orders and the inhabitants at large whose personal accommodation and comfort are so immediately concerned, are called on to render every assistance and cooperation in their power to the carrying the same into the fullest effect by abstaining themselves from vitiating the said waters in any respect and at the same time informing against any persons whom they may find neglecting or otherwise violating them in order that they may be punished as the law directs.

And as the erecting or keeping up of necessaries, slaughter houses, tanneries, dying-houses, breweries and distilleries on or near the banks so as the water destined for the use of man is shamefully and grossly rendered impure by filth of every kind from thence, contrary to the law which prohibits such nuisances it is hereby ordered and directed:

1. That no necessaries, slaughter houses, tanneries, dying-houses, breweries or distilleries shall in future be erected on or near to the said stream, tanks or springs flowing thereto, or thence along any part of their course through the town of Sydney: and further that all such buildings already erected or established thereon shall be immediately pulled down or otherwise suppressed under pain of the owners or possessors being proceeded against and prosecuted under the Nuisance Act.

2. That no person shall presume to throw any dirt, rubbish, ashes, dirty water or filth of any kind into the tanks or streams supplying them or into any of the springs or streamlets flowing to and past the said tanks.

3. That no linen, clothes or any other article shall be washed in the said tanks, stream, springs or streamlets.

4. That no pigs, goats, sheep, horned cattle or horses shall be permitted to drink at or otherwise render foul the said waters, or any part of them under pain of forfeiture of the said animals.

5. It having been further represented to His Excellency that certain persons have been heretofore in the habit of throwing ashes, filth and dirt of every description into the streets, on the footpaths and into the drains leading along the same, to the great annoyance of persons passing along them, to the injury of the said streets, and also to the great prejudice of the said tanks and streams to which those nuisances are carried down by the rains: all persons are therefore strictly enjoined not to throw or lay down in future any filth or dirt upon the said streets under pain of being proceeded against and punished as the law directs in such cases.

6. For the more compleatly preserving the cleanliness and purity of the said springs and waters His Excellency strongly recommends to all the proprietors of ground lying on the banks to build alongside thereof a substantial wall of masonry, four feet high, for the entire extent of their premises, whereby they will contribute most effectually to the preserving that purity to the water which a sense of decency alone should dictate, and which is absolutely necessary to the preserving it fit for the use of man.

7. All constables and peace officers are hereby required to attend to these Orders by reporting from time to time to one or more of the magistrates the conduct of any person or persons acting in disobedience thereof: and the magistrates are called upon to pay the strictest attention to the enforcing the law against offenders therein.

[1] From the original in the Mitchell Library, Sydney.

Correspondence.

POISONING BY ORGANIC PHOSPHATES USED AS PESTICIDES.

SIR: The use of organic phosphates as pesticides in other parts of the world has been followed by many cases of severe poisoning and a number of deaths. Until recently no authenticated case of poisoning by organic phosphates had been reported in Australia, but two recent tragedies in Tasmania now emphasize the hazards associated with their use. Each death resulted from negligence; in one instance an aged man with poor eyesight took a dose from a bottle bearing a cough mixture label faintly overmarked with the words "Poisonous Spray", and in the other a two-year-old boy drank a little of a brown liquid he found in a bottle in a backyard near his home. The victims died within a relatively short time. The cause of these deaths remained unknown until the government analyst identified the content of the bottle. In the first case it was tetraethyl pyrophosphate (TEPP), and in the second *o,o*-diethyl-*o*-*p*-nitrophenyl thiophosphate ("Parathion").

Organic phosphate insecticides such as the two mentioned are now being increasingly used in agriculture in Australia following their spectacular success as pesticides in the United States of America. These compounds are highly toxic, but they may be used safely provided thorough precautions are taken in handling, formulation and application. Failure to wear protective clothing and equipment, and to observe the strict rules of hygiene will certainly lead to poisoning, and possibly to death.

Doctors, especially those in rural areas, should be familiar with the symptoms of organic phosphate poisoning and with the required treatment. The following notes are offered as a help should a case be encountered.

The symptoms depend upon the degree of intoxication. In the early stages there are symptoms of parasympathetic stimulation resulting in (i) increased secretion from the salivary, bronchial, gastric, sweat and lachrymal glands; (ii) cardiac inhibitions and vasodilation; (iii) contractions of the various smooth muscles: (*a*) in the eye, producing pin-point pupils with dimness and blurring of vision, (*b*) in the alimentary canal causing nausea, vomiting, abdominal cramps, diarrhœa and tenesmus, (*c*) in the bronchioles causing bronchospasm, (*d*) in the bladder giving rise to frequency and involuntary emptying.

Later on the synapses between the ganglion cells and the preganglionic fibres are paralysed, producing muscular fibrillation, cramps, weakness and incoordination. The fibrillation most commonly occurs in the eyelids and the cramp in the lower limbs. With a more severe intoxication symptoms due to central nervous involvement become manifest as restlessness, anxiety, giddiness, drowsiness, headaches, slurred speech, mental confusion, visual distortion, convulsions and coma.

Treatment consists of the administration of atropine sulphate intramuscularly at one-hourly intervals in doses of two milligrammes until signs of saturation occur. In severe cases 30 milligrammes or more may be required. The dose may then be reduced, but its administration should be continued as long as any symptoms of parasympathetic stimulation are present. Adjuvants to atropine therapy include washing the skin, ocular irrigation and gastric lavage, parenteral replacement of fluids, administration of oxygen, tracheal intubation and artificial respiration.

The acute emergency lasts for twenty-four to forty-eight hours. Susceptibility to relatively small amounts of organic phosphates continues until there is nearly complete regeneration of red blood cell and plasma cholinesterases. Because this requires several weeks, further exposure should be avoided during this period. Case histories of "Parathion" poisoning in Britain indicate that hypotonia of voluntary muscles with diminished tendon reflexes has persisted for at least two weeks after acute poisoning. Medical research

workers have therefore concluded that acutely poisoned persons should be kept at rest for a longer period after the acute symptoms have subsided, and that physical activity should be limited until cholinesterase levels return to normal.

Yours, etc.,

A. J. METCALFE,
Director-General of Health.

Department of Health,
Canberra,
October 15, 1953.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

AT an impressive ceremony held in the Great Hall of the University of Sydney at 12 noon on Tuesday, October 13, 1953, in the presence of Fellows of the University Senate, professors, lecturers and other members of the teaching staff and students of the University, the Degree of Doctor of Laws *honoris causa* was conferred upon His Excellency Field Marshal Sir William Slim, Governor-General of the Commonwealth, by the Chancellor of the University, Sir Charles Bickerton Blackburn. The presentation of His Excellency for the degree was made by the Deputy Chancellor, Dr. C. G. McDonald. Dr. McDonald spoke as follows.

Mr. Chancellor,

University men and women, occupied with the study of letters or searching with true Lucretian scrutiny into the causes of things, are not unmindful of those great men whose present lives will in due time become a portion of our storied past.

It is good to remember that Field Marshal Sir William Slim, late Chief of the Imperial General Staff and now Governor-General of this Continent, did not spring, like Minerva, from the head of Jove. His early ambition for an army career had to await the time and tide of coming events. Spending his spare time as a ranker in the Territorials, he is seen in camp at Tidworth on the outbreak of the first World War, with a single stripe on his tunic. Within three weeks he is an officer, and the following year we find him wounded during service in the Dardanelles, so grievously that an unimaginative medical board invalids him out of the army as permanently unfit. The prudent recorder draws a veil over the events immediately following. All we know is that this determined young man is back in the army within a twelve month, and when challenged to state whether by fair means or foul he replies grimly "by undivulged means". Service in Mesopotamia and India follows, and when peace comes in November, 1918, he transfers to the Indian Army. Between the wars he serves chiefly in India with his beloved Ghurkas.

The civilian world knew little of Brigadier Slim prior to September, 1939. But within a short time it was to read of exploits that suggest that he and his troops travelled on a magic carpet. In 1940 he is in the Sudan and in Eritrea, leading his brigade on a Bren-gun carrier to the capture of Gallabat. In 1941 he dashes with his Indians to Irak, Syria and Persia, and in a twinkling he has joined them to the Russian Army in Teheran. Early in 1942 when matters are grim, with defeat staring us in the face, he is seen fighting a long and bitter retreat from the Japanese through the Burma jungle to India. Next year he has fashioned a new army, the famous 14th. And now the scene is Assam and the enemy are again the Japanese. He lures them on and then counter-attacks. No Fabius Cunctator, he ignores the drenching rains of the wet season, removes whole divisions with their equipment from one theatre to another by air and routs the invader at Kohima and Imphal. The crowning achievement comes with his counter-invasion of Burma in 1944 and 1945—an epic of jungle fighting in which brilliant strategy with all its elements of daring and surprise overwhelm a dazzled and bewildered enemy. Was there ever a soldier whose army career gleamed so fitfully at first and ended in such a blaze of immortal glory? In the history of our struggle for survival we shall always remember with gratitude Slim of Meiktila and Slim of Rangoon.

Cedant arma togæ. With the coming of peace there could be no rest for such a man. In 1947, on his retirement from the army, industry claimed him as Deputy Chairman of British Railways, but within a year the army demanded his return as Chief of the Imperial General Staff. Released again, he was to arrive in Australia as our Governor-General in January, 1953, but everybody knows how Sir Winston Churchill, loath to lose him, so delayed his departure that we thought he would never come.

Concedat laurea linguæ. In the few months he has been with us we have learnt to know him through his striking speeches and impressive broadcasts, while all who have met him have basked in his warm friendliness. This University is pleased to honour a great Englishman who has dedicated his life to the service of our race and whose high qualities of mind have found expression both in noble action and in noble words.

Mr. Chancellor, I have the honour to present Field Marshal Sir William Slim, Governor-General of Australia, for admission to the degree of Doctor of Laws *honoris causa.*

After the ceremony the Governor-General and Lady Slim were entertained at luncheon by the Chancellor and Fellows of the Senate and their wives.

At 2.30 p.m., after a review by His Excellency of the Sydney University Regiment, a ceremony of Commemoration of Benefactors of the University was held on the lawns in front of the main building of the University. This ceremony was followed by a garden party at which His Excellency and Lady Slim met graduates of the University and their wives.

Medical Practice.

MEDICAL PRACTITIONERS ACT, 1938-1950, OF NEW SOUTH WALES.

THE following notice was published in the *Government Gazette of the State of New South Wales,* Number 133, of July 24, 1953.

The Governor-in-Council has been pleased to approve of the Regulations under the Medical Practitioners Act, 1938-1950, being amended as set forth hereunder.

M. O'SULLIVAN,
Minister for Health.

The Regulations are amended by *omitting* Regulations 27 and 28 and by *inserting* in lieu thereof the following Regulations:

27. In Regulations 30 to 34 the word "designation" does not include name, initials, word, title, addition, description or symbol which an unregistered person is precluded from taking or using by subsection one of section 42 of the Act.

28. For a period of three months from the date of commencement of this Regulation, an unregistered person may advertise himself to be entitled, qualified, able or willing to practise medicine or surgery in any of its branches or to give or perform any medical or surgical advice, service, attendance or operation, in the same manner as he was lawfully entitled so to do prior to the commencement of this Regulation.

29. After the expiration of three months from the commencement of this Regulation, an unregistered person may advertise himself to be entitled, qualified, able or willing to practise medicine or surgery in any of its branches or to give or perform any medical or surgical advice, service, attendance or operation in accordance with Regulations 30 to 34.

30. An unregistered person may exhibit on the outside of any premises at which he carries on his practice one metal plate or notice, subject to the following conditions:

(a) The size of the plate or notice shall not exceed two square feet in area.

(b) The plate or notice shall not exceed two feet in length.

(c) The lettering thereon shall not exceed three inches in height and shall be limited to his name, designation and hours of attendance.

(d) The plate or notice shall not be illuminated in any manner whatsoever and the lettering thereon shall not be by lighting or any other similar contrivance.

31. An unregistered person may exhibit on the interior of any premises at which he carries on his practice a notice in accordance with the following conditions:

(a) The lettering on the notice shall not exceed two inches in height and shall be limited to his name and designation.

(b) The notice shall not be illuminated in any manner whatsoever and the lettering thereon shall not be by lighting or any other similar contrivance.

32. An unregistered person may insert in any newspaper an advertisement announcing the commencement of practice, subject to the following conditions:

(a) The size of the advertisement shall not exceed the equivalent of four inches single column width (13 ems) of space in any one issue. Not more than one such advertisement shall be published in any one issue of the newspaper.

(b) The wording of the advertisement shall be limited to the announcement of commencement of practice, together with his name, address, designation, hours of attendance and telephone number.

33. An unregistered person may announce the removal of practice or resumption of practice by means of a letter, subject to the following conditions:

(a) The letter shall be sent only to his bona-fide patients.

(b) The wording of the letter shall be limited to the announcement of removal or resumption of practice, together with his name, address, designation, hours of attendance and telephone number.

34. Notwithstanding anything contained in Regulations 30 to 33, inclusive, an unregistered person shall not be deemed to have advertised otherwise than in accordance with the Regulations by reason only of the following facts, that is to say:

(a) That on any letterhead or appointment card used by him in connection with his practice, his name, address, designation, hours of attendance and telephone number, but no other information, are printed.

(b) That his name, designation, address and telephone number are included, in ordinary type in the alphabetical list of subscribers and/or the classified section of any official telephone directory.

(c) That, in the alphabetical list of subscribers and/or classified section of any official telephone directory currently in use at the commencement of this Regulation, his name, designation, address and telephone number are included in other than ordinary type; or information, additional to his name, designation, address and telephone number, is printed in respect of him.

Obituary.

HAROLD JOHN RITCHIE.

WE are indebted to Dr. A. W. Holmes à Court for the following appreciation of the career of the late Dr. Harold John Ritchie.

Dr. Harold Ritchie was born at Bega, New South Wales, and died in Sydney on September 9, 1953, in his seventieth year. Educated at Sydney Grammar School, he was a student at Saint Paul's College during his medical course at the University of Sydney, where he graduated M.B., Ch.M. with honours in 1908.

He was appointed to the resident staff of Sydney Hospital and gained wide experience both as junior and senior resident medical officer, exhibiting an extraordinary zeal and enthusiasm for his professional work.

On leaving the hospital he was appointed to the honorary medical staff, and after serving for some fourteen years as out-patient physician he became honorary physician—a position he occupied with dignity and success until his retirement from the active staff in 1944. On his appointment as Lecturer in Clinical Medicine in 1926 he generously offered to share the lectureship with the writer: a happy and harmonious association which persisted for nearly twenty years. He was appointed honorary consulting physician in 1944 after serving the hospital in a very active capacity for thirty-four years, for nineteen of which he was a member of the Faculty of Medicine within the University.

Dr. Ritchie accepted the position of honorary associate physician to the Prince Henry Hospital in 1935; he was a member of the National Health and Medical Research Council for several years and was appointed by the State Government a member of the Medical Board of New South Wales.

He was a Foundation Fellow of The Royal Australasian College of Physicians at its inauguration in 1938, and, after serving on the Council of this body from its inception, he filled the office of President with dignity and distinction in 1944-1946. Sage in Council, he was fearless and forceful in his expressions of opinion and played a conspicuous part in the development of the College. At the conclusion of his term of office he received the rare distinction of election to Fellowship of the Royal College of Physicians of London.

In his private practice as a consulting physician he enjoyed the confidence of his professional colleagues and earned the gratitude of his patients for his skill, unfailing devotion and human kindliness.

A review of his professional activities is entirely inadequate to give a clear impression of the man himself. A person of striking presence with handsome and intellectual cast of features, he was a brilliant and extremely well-informed conversationalist who could maintain his ascendency in almost any company. Not only was he very well read, but possessed a remarkable memory and was

keenly interested in literature as well as being thoroughly versed in all matters relating to his profession. It is not easy to draw a clear word picture of a mind so alert and versatile and a personality so vivid and individualistic. To his closer associates it was a matter of keen regret that he had never taken the opportunity to visit the medical centres of the Old World and America, although the wide scope of his reading kept him *au fait* wth the developments of medical science throughout the world.

Although largely occupied with clinical lectures and teaching, he was not a prolific contributor to medical literature. In 1940 he delivered the Anne MacKenzie Oration at Canberra (THE MEDICAL JOURNAL OF AUSTRALIA, October 24, 1940). This was a scholarly address on a high intellectual plane, delivered in his characteristic inimitable style, revealing a clear insight into the relationship between functional disorder and organic disease.

Ritchie was probably at his best when surrounded by his students who came to appreciate his rather sardonic smile and the subtle flashes of wit and humour which enlivened his clinical lectures and ward rounds. Always ready to show appreciation where such was due, he would never condone slackness or inefficiency and preserved an inviolate natural dignity which inhibited any undue familiarity or indiscipline. He was blessed with a happy home life, and, although interested objectively in sport and indeed in most human activities, his recreational outlets were chiefly found in reading, beach fishing and for a time racing horses.

During the later months of his life he was afflicted with chronic and devastating illness, but was fortunate to see his two greatest desires achieved—the progressive development of Sydney Hospital clinical school and the appointment of his only son to follow in his footsteps on the medical staff of the hospital he loved and served so faithfully.

The sincere sympathy of his colleagues and friends is vouchsafed in full measure to his widow and his son.

PROFESSOR H. K. WARD writes: The writer was a medical student when he first encountered Harold Ritchie, who was then the medical tutor at one of the residential colleges. It was a new and never forgotten experience for that student, opening the door to medicine, which came alive for the first time. Up to that time medicine had existed in that student's mind as a medley of ill-digested lectures or text-books. From that time it was a fascinating if tantalizing subject.

Others can speak of his outstanding ability as a physician, his diagnostic acumen and his clinical judgement, qualities which ultimately led to his election as President of The Royal Australasian College of Physicians. But perhaps his greatest contribution was in that role of teaching. He was a born teacher. Conscientious and punctual to a fault, his standards high, he expected and exacted the same approach from his students. Free from mannerisms, medicine was his subject taught on the patient from a wealth of experience and reading, for he was an omnivorous and wide reader to the end of his life.

He was well aware that professional excellence was not enough if our hospitals were to achieve world ranking. Although he never had the opportunity to undertake investigation himself, he and Professor Inglis were mainly responsible for setting the Kanematsu Institute on the same path that had been blazed by his friend Charles Kellaway with the Walter and Eliza Hall Institute. Nor was his interest in medical research confined to Sydney Hospital. As the representative of The Royal Australasian College of Physicians on the National Health and Medical Research Council, he played a leading part in helping Dr. Cumpston shape the policy of the new Council.

He had a strong personality, and like all who have strong personalities he was perhaps a little too intolerant of weakness, but he was never jealous of other men's success. Loyal to his friends, it was rarely if ever expressed, and therein lay much of the charm of a complex character, who will long be remembered by those who had the privilege of his friendship.

The writer is acutely conscious that he has failed to paint a picture of the man. Despite all the honours he earned and received, Harold Ritchie probably did not reach his own ambitions and ideals. He did achieve the only thing worth having—the respect of his peers.

Post-Graduate Work.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

PROGRAMME FOR NOVEMBER AND DECEMBER.

Lectures by Dr. Douglas Guthrie.

DR. DOUGLAS GUTHRIE, of Edinburgh, medical historian, will give the following lectures:

Thursday, November 12, at 8.15 p.m., at the Medical Society Hall, East Melbourne: "Lister and His Achievement."

Saturday, November 21, at 8.15 p.m., at the Northern District School of Nursing, Lister House, Rowan Street, Bendigo: "Witches and Witch-Doctors." This will form part of an afternoon and evening course, as set out below.

Week-End Course at Hamilton.

On November 14 and 15, at 3HA Theatrette, Hamilton, *the following course will be held:*

Saturday, November 14: 4 p.m., Dr. R. Lowe, "Eye Conditions in General Practice"; 8 p.m., Dr. J. Eric Clarke, "Recent Advances in Medicine".

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED SEPTEMBER 26, 1953.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	2(1)	2	..	..	..	..	..	..	4
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	1	..	..	..	..	..	1
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	1	..	..	..	..	..	..	..	1
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	15	9(2)	6(4)	..	..	1	..	..	31
Diphtheria	11(9)	2(2)	1(1)	..	3(3)	1	..	..	18
Dysentery (Bacillary)	..	..	..	..	1(1)	2(2)	..	..	3
Encephalitis	..	..	..	1(1)	..	..	..	..	1
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	1	..	..	..	1(1)	..	..	2
Infective Hepatitis	..	13(5)	..	..	5(4)	..	..	..	18
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	1	..	..	..	2	..	3
Leptospirosis	..	..	3	..	..	..	..	..	3
Malaria	..	..	..	..	..	..	1	..	1
Meningococcal Infection	5(3)	7(3)	..	..	3(3)	..	..	..	15
Ophthalmia	..	..	..	..	2	..	..	..	2
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	1	..	..	..	..	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	8(7)	1	2	8(7)	2	..	..	..	21
Puerperal Fever	..	..	1	..	..	..	..	..	1
Rubella	..	20(3)	1	..	30(25)	..	..	..	51
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	8(4)	35(20)	18(15)	..	2(2)	2(2)	..	..	65
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	31(25)	16(14)	7(1)	9(8)	5(2)	5(1)	3	..	76
Typhoid Fever	2(2)	..	..	1(1)	..	..	..	..	3
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	1	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

"Orthopædic Problems in Children".

Sunday, November 15: 10 a.m., Dr. J. B. Colquhoun, Enrolments for this course should be made with Dr. S. C. Fitzpatrick, 59 French Street, Hamilton.

Flinders Naval Depot.

On November 18, at 2.30 p.m., at Flinders Naval Depot, Dr. Norman James will speak on "Safety during Anæsthesia". On December 9 Dr. Roy Cash will speak on "Conservative Oral Surgery". This is by arrangement with the Royal Australian Navy.

Bendigo.

On Saturday, November 21, at the Northern District School of Nursing, Rowan Street, Bendigo, the following lectures will be given:

2.15 p.m.: "Symposium on the Newer Therapeutics", Dr. Stanley Williams and Dr. J. E. Sewell.

8.15 p.m.: "Witches and Witch-Doctors", Dr. Douglas Guthrie, medical historian, of Edinburgh.

Enrolments for this course should be made with Dr. P. Breheny, 228 Munday Street, Bendigo.

Ballarat.

On Thursday, November 26, at Craig's Hotel, Ballarat, Dr. E. Price will lecture on "Deformities of the Feet".

Enrolments should be made with Dr. J. P. L. Griffiths, 6 Dowling Street, Ballarat.

Fees.

Except in the case of Flinders Naval Depot, fees for all the above lectures are at the rate of 15s. per lecture. Those who have paid an annual subscription to the Post-Graduate Committee are invited to attend without further charge.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Clinical Meeting at Balmoral Naval Hospital.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that a clinical meeting will be held at the Balmoral Naval Hospital on Tuesday, November 10, 1953, at 2 p.m., when Dr. W. Cotter Harvey will speak on "Early Diagnosis in Thoracic Disease". Clinical cases will be shown after the lecture. All members of the medical profession are invited to attend.

Notice.

SECTION OF PREVENTIVE MEDICINE: VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

THE next meeting of the Section of Preventive Medicine of the Victorian Branch of the British Medical Association will be held in the Medical Society Hall, 426 Albert Street, East Melbourne, at 4.30 p.m. on Thursday, November 12, 1953. A paper will be presented entitled "Epidemiology and Bacteriology of Typhoid Fever: A Preliminary Report" by Dr. E. Forbes Mackenzie, of the Department of Health, and Dr. Michael Wilson, Assistant Director of the Public Health Laboratory, University of Melbourne. All members of the Branch are invited to attend.

Medical Appointments.

Dr. Kenneth Laughlan Wise has been appointed Quarantine Officer, Northern Territory, under the provisions of the *Quarantine Act*, 1908-1950.

Dr. M. R. Coolican has been appointed government medical officer at Stanthorpe, Queensland.

Dr. Rosemary Dorothea Pavy has been appointed registrar at the Mareeba Babies' Hospital, South Australia.

Dr. A. E. Coates has been appointed a member of the Queen's Memorial Infectious Diseases Hospital Board, pursuant to the provisions of Section 5 (*a*) of the *Infectious Diseases Hospital Act*, 1928, of Victoria.

Dr. C. R. D. Brothers has been apointed Inspector of Inebriates Institutions, pursuant to the provisions of Section 15 (1) of the *Inebriates Act*, 1928, of Victoria.

Dr. W. A. J. Brady has been appointed Deputy Superintendent of the Mental Hospital, Sunbury, pursuant to the provisions of Section 35 of the *Mental Hygiene Act*, 1928, of Victoria.

Sir Philip Messent has been appointed President of the Medical Board of South Australia.

Dr. I. M. H. Camens has been appointed Senior Medical Registrar at the Royal Adelaide Hospital.

Diary for the Month.

Nov. 3.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Nov. 4.—Western Australian Branch, B.M.A.: Council Meeting.
Nov. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Nov. 11.—Victorian Branch, B.M.A.: Clinical Meeting.
Nov. 14.—Victorian Branch, B.M.A.: Country Branch Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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